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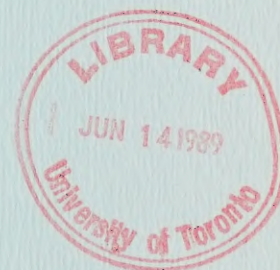
Ontario

ENVIRONMENTAL ASSESSMENT BOARD

VOLUME: 108

DATE: June 5th, 1989

BEFORE: M.I. JEFFERY, Q.C., Chairman
E. MARTEL, Member
A. KOVEN, Member



FOR HEARING UPDATES CALL (TOLL-FREE): 1-800-387-8810

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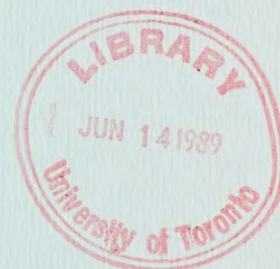


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HEARING ON THE PROPOSAL BY THE MINISTRY OF NATURAL
RESOURCES FOR A CLASS ENVIRONMENTAL ASSESSMENT FOR
TIMBER MANAGEMENT ON CROWN LANDS IN ONTARIO

IN THE MATTER of the Environmental
Assessment Act, R.S.O. 1980, c.140;

- and -

IN THE MATTER of the Class Environmental
Assessment for Timber Management on Crown
Lands in Ontario;

- and -

IN THE MATTER of an Order-in-Council
(O.C. 2449/87) authorizing the
Environmental Assessment Board to
administer a funding program, in
connection with the environmental
assessment hearing with respect to the
Timber Management Class
Environmental Assessment, and to
distribute funds to qualified
participants.

Hearing held at the Ramada Prince Arthur
Hotel, 17 North Cumberland St., Thunder
Bay, Ontario, on Monday, June 5th,
1989, commencing at 11:15 a.m.

VOLUME 108

BEFORE:


MR. MICHAEL I. JEFFERY, Q.C.	Chairman
MR. ELIE MARTEL	Member
MRS. ANNE KOVEN	Member

A P P E A R A N C E S

MR. V. FREIDIN, Q.C.)	MINISTRY OF NATURAL
MS. C. BLASTORAH)	RESOURCES
MS. K. MURPHY)	
MS. Y. HERSCHER)	
MR. B. CAMPBELL)	MINISTRY OF ENVIRONMENT
MS. J. SEABORN)	
MR. R. TUER, Q.C.)	ONTARIO FOREST INDUSTRY
MR. R. COSMAN)	ASSOCIATION and ONTARIO
MS. E. CRONK)	LUMBER MANUFACTURERS'
MR. P.R. CASSIDY)	ASSOCIATION
MR. J. WILLIAMS, Q.C.	ONTARIO FEDERATION OF
MR. B.R. ARMSTRONG	ANGLERS & HUNTERS
MR. G.L. FIRMAN	
MR. D. HUNTER	NISHNAWBE-ASKI NATION and WINDIGO TRIBAL COUNCIL
MR. J.F. CASTRILLI)	
MS. M. SWENARCHUK)	FORESTS FOR TOMORROW
MR. R. LINDGREN)	
MR. P. SANFORD)	KIMBERLY-CLARK OF CANADA
MS. L. NICHOLLS)	LIMITED and SPRUCE FALLS
MR. D. WOOD)	POWER & PAPER COMPANY
MR. D. MacDONALD	ONTARIO FEDERATION OF LABOUR
MR. R. COTTON	BOISE CASCADE OF CANADA LTD.
MR. Y. GERVAIS)	ONTARIO TRAPPERS
MR. R. BARNES)	ASSOCIATION
MR. R. EDWARDS)	NORTHERN ONTARIO TOURIST
MR. B. McKERCHER)	OUTFITTERS ASSOCIATION
MR. L. GREENSPOON)	NORTHWATCH
MS. B. LLOYD)	

APPEARANCES: (Cont'd)

MR. J.W. ERICKSON, Q.C.) MR. B. BABCOCK)	RED LAKE-EAR FALLS JOINT MUNICIPAL COMMITTEE
MR. D. SCOTT) MR. J.S. TAYLOR)	NORTHWESTERN ONTARIO ASSOCIATED CHAMBERS OF COMMERCE
MR. J.W. HARBELL) MR. S.M. MAKUCH)	GREAT LAKES FOREST
MR. J. EBBS	ONTARIO PROFESSIONAL FORESTERS ASSOCIATION
MR. D. KING	VENTURE TOURISM ASSOCIATION OF ONTARIO
MR. D. COLBORNE	GRAND COUNCIL TREATY #3
MR. R. REILLY	ONTARIO METIS & ABORIGINAL ASSOCIATION
MR. H. GRAHAM	CANADIAN INSTITUTE OF FORESTRY (CENTRAL ONTARIO SECTION)
MR. G.J. KINLIN	DEPARTMENT OF JUSTICE
MR. S.J. STEPINAC	MINISTRY OF NORTHERN DEVELOPMENT & MINES
MR. M. COATES	ONTARIO FORESTRY ASSOCIATION
MR. P. ODORIZZI	BEARDMORE-LAKE NIPIGON WATCHDOG SOCIETY
MR. R.L. AXFORD	CANADIAN ASSOCIATION OF SINGLE INDUSTRY TOWNS
MR. M.O. EDWARDS	FORT FRANCES CHAMBER OF COMMERCE
MR. P.D. McCUTCHEON	GEORGE NIXON



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APPEARANCES: (Cont'd)

MR. C. BRUNETTA

NORTHWESTERN ONTARIO
TOURISM ASSOCIATION

I N D E X O F P R O C E E D I N G S

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<u>EDWARD ISKRA,</u>	
<u>ROBERT L. GALLOWAY,</u>	
<u>ROBERT A. CAMPBELL,</u>	
<u>MICHAEL EDWIN BUSS, Sworn</u>	
<u>PETER PHILLIP HYNARD, Recalled</u>	
<u>CINDY STERN KRISHKA, Affirmed</u>	18028
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I N D E X O F E X H I B I T S

<u>Exhibit No.</u>	<u>Description</u>	<u>Page No.</u>
603A	Volume I of Panel 12 statement of evidence.	18024
603B	Volulme II of Panel 12 statement of evidence.	18024
603C	Document entitled A Decision Making Model for Forest Managers Using economic Considerations.	18024
604A	Volume I of Panel 13 statement of evidence.	18025
604B	Volume II of Panel 13 statement of evidence.	18025
604C	Document entitled: Environmental Effects of Pesticide Use for Timber Management in Ontario by Jones, et al.	18025
605	Letter dated May 31st, 1989.	18027
606	Reproduction of the federal <u>Pest Control Products Act</u> and the <u>Ontario Pesticides Act</u> .	18027
607	Flow chart prepared by MNR.	18032
608	Package of hard copies of 15 photographs contained in Document No. 1 to witness statement.	18042
609	Two-page hard copy document of overhead entitled: Summary of Tending Treatments carried out on Crown Lands in the Area of the Undertaking.	18043
610	MOE Interrogatory Nos. 2 & 6; OFAH Interrogatory No. 4; and FFT Interrogatory No. 15.	18043

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<u>Exhibit No.</u>	<u>Description</u>	<u>Page No.</u>
611	Table of Contents re: evidence Mr. Hynard.	18047
612	Document entitled: A Real Example Demonstrating Financial Considerations in Making Silvicultural Decisions.	18065
613	Biscuit obtained from an unreleased non-crop tree.	18099
614	Biscuit obtained from a crop tree.	18099
615	Photcopy depicting biscuits (Exhibits 613,614).	18099
616A	Slide depicting commercial thinning in a red pine plantation in Minden.	18103
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616C	Slide depicting red pine plantation with no understorey development.	18105
616D	Slide depicting red pine plantation with understorey development.	18107

1 ---Upon commencing at 12:45 p.m.

2 THE CHAIRMAN: Good afternoon everyone.
3 Please be seated.

4 Ms. Murphy, are we going to deal with the
5 satellite hearing matter up front?

6 MS. MURPHY: I don't think so, Mr.
7 Chairman. I really haven't had the opportunity to
8 speak to my friends about it since I have provided them
9 with that letter. Things have been a little bit busy
10 the last little while.

11 THE CHAIRMAN: Okay.

12 MS. MURPHY: I will certainly try to take
13 the opportunity, now that we are all in Thunder Bay, to
14 discuss that with my friends this week.

15 THE CHAIRMAN: Okay. In order to assist
16 you with your deliberations with your colleagues, I
17 think it might be advantageous for the Board just to
18 indicate to you at this time some of its thinking on
19 the issue.

20 We have had an opportunity to, first of
21 all, review your letter; and, secondly, discuss the
22 matter amongst ourselves. As far as timing goes, we
23 are going to suggest the last week of September or the
24 first week of October and that would allow ample notice
25 to be given either towards the end of August, but with

1 supplementary notice by way of radio announcements, et
2 cetera, during part of September so that everyone would
3 know in fact that we are coming. That's No. 1.

4 No. 2, we are seriously considering as
5 the first location Dryden, Ontario; and, thirdly, we
6 are still of the view, unless persuaded to the
7 contrary, that the session should be divided into
8 perhaps two sections, one being that the parties or
9 members of the public who wish to make a formal
10 submission would have the opportunity to do so, would
11 present it by way of written document and/or oral
12 presentation, would be available to be questioned by
13 any of the other parties in the normal course and that
14 is just a normal type of submission for these types of
15 proceedings.

16 The second element is the aspect where
17 the public may want further information and, in that
18 regard, we are going to suggest that if the Ministry
19 wishes to hold a public information session on their
20 own they may do so the same day, not the day before or
21 some day other than the day upon which we are going to
22 commence this satellite hearing, so that people are not
23 forced to come on one day and then come back the next
24 day to address the Board, and that would be prior to
25 the Board sitting that day.

1 We would probably start the first session
2 maybe either in the evening the first day or in the
3 afternoon. We haven't determined the exact start time
4 or anything like that. The session may well, depending
5 on the interest, last for more than one day, but there
6 will be at least one evening session to accommodate
7 those people who cannot attend during the daytime.

8 The Board is still of the view so far
9 that there should be some witnesses provided by the
10 Ministry for the purposes of providing information. We
11 were going to suggest - without suggesting which
12 witnesses, that would be of course the Ministry's
13 choice - but a forester who would have knowledge of the
14 overall picture, and by that we mean not just the
15 forest management unit in and around the Dryden area.
16 Secondly, a wildlife biologist. Again, it would be
17 helpful if this person had a broader picture covering
18 other forest management units within the area of the
19 undertaking; a policy person or a person that could
20 speak to policy of MNR with respect to this undertaking
21 and, as well, and importantly, a local district manager
22 or equivalent, somebody who knows the local situation
23 well for that particular forest management unit.

24 We are also suggesting that when people
25 ask questions for clarification they will not be

1 subject to cross-examination. These are members of the
2 public. That is different from people making a
3 submission who would be allowed to be questioned in the
4 normal course with, since they are unrepresented, the
5 Board looking out for their welfare if counsel get to
6 be overzealous in their cross-examination.

7 Okay. Those are the general sort of
8 broad guidelines which the Board feels would best serve
9 the interest of the public in terms of these satellite
10 hearings.

11 Now, you may have some more specific
12 concerns to address the Board about which we will be
13 pleased to deal with after you have had a chance to
14 consult with your colleagues.

15 I would just say this to counsel who are
16 concerned about this, in the sense that they feel there
17 might be some unfairness based on questions that might
18 come from the public in terms of the evidentiary side
19 of things, have some faith in the Board who has dealt
20 many times with these public sessions in terms of
21 unrepresented members of the public in both the
22 questioning format in terms of finding out more
23 information and the presentation of oral or written
24 submissions.

25 The Board is not likely to be swayed by

1 anything that the Board does not find merit with in
2 terms of the positions put forward. I think there has
3 to be sort of trust both ways in the sense that some of
4 your concerns raised last time about what you may
5 perceive to be evidentiary problems. The Board doesn't
6 necessarily perceive there to be that much of a problem
7 with this kind of scenario.

8 Okay. Having said all that, that should
9 give you something to at least talk about.

10 MS. MURPHY: Thank you, Mr. Chairman.
11 That's very helpful.

12 THE CHAIRMAN: Okay.

13 MS. MURPHY: I would just like to take a
14 couple of minutes to file some documentation at the
15 beginning of the combination of Panels 12 and 13. My
16 information is that we are at Exhibit No. 603; is that
17 accurate, Mr. Chairman?

18 THE CHAIRMAN: Yes, it is.

19 MS. MURPHY: Then I would propose -- I
20 have actually placed on your table there so that you
21 can mark as an exhibit -- I think it is the ones that
22 are right there beside Mr. Martel.

23 First of all, you will find three
24 documents that together make up the witness statement
25 for Panel 12. There will be a Volume I -- Panel 12

1 Volume I, Panel 12 Volume II and another document filed
2 with it which is called: A Decision-Making Model for
3 Forest Managers Using Economic Considerations. That's
4 a document by Mr. Hynard. And I would suggest that
5 those documents be marked as 603A, B and C.

6 THE CHAIRMAN: Very well. Volume I will
7 be Exhibit 603A, Volume II will be 603B and the latter
8 document, A Decision-Making Model for Forest Managers
9 Using Economic Considerations will be Exhibit 603C.

10 ---EXHIBIT NO. 603 A: Volume I of Panel 12 statement
11 of evidence.

12 ---EXHIBIT NO. 603B: Volume II of Panel 12 statement
13 of evidence.

14 ---EXHIBIT NO. 603C: Document entitled A Decision
15 Making Model for Forest Managers
16 Using Economic Considerations.

17 THE CHAIRMAN: Did you only file one
18 of these? (indicating)

19 MS. MURPHY: The material was filed
20 originally with the documentation that was provided to
21 the Board. I have just put one on your table there to
22 mark as an exhibit. Perhaps we can ask Mr. Mander if
23 your copies are perhaps in his possession.

24 THE CHAIRMAN: Okay, just one moment.

25 MS. MURPHY: Or perhaps locate a couple
more copies. Excuse me one second.

All right. Mr. Hynard advises that you

1 will probably not need that particular document for his
2 evidence today, so we can discuss with Mr. Mander
3 whether you need it, but...

4 THE CHAIRMAN: Okay. We have it anyways.
5 We have Mr. Martel's and I have mine here as well.
6 Okay, we have it. Thank you.

7 MS. MURPHY: Fine. Then next we also
8 have the material for Panel 13.

9 THE CHAIRMAN: Okay.

10 MS. MURPHY: And I would suggest we mark
11 that as the next exhibit. That again is in three
12 parts. There is a Volume I, Volume II and another
13 document that was filed with it, that document is
14 called Environmental Effects of Pesticide Use for
15 Timber Management in Ontario by Jones, et al. And I
16 would suggest those three documents be marked Exhibit
17 604A, B and C.

18 THE CHAIRMAN: Very well. So marked.

19 ---EXHIBIT NO. 604A: Volume I of Panel 13 statement of
20 evidence.

21 ---EXHIBIT NO. 604B: Volume II of Panel 13 statement
22 of evidence.

23 ---EXHIBIT NO. 604C: Document entitled: Environmental
24 Effects of Pesticide Use for
25 Timber Management in Ontario by
Jones, et al.

MS. MURPHY: And for the purposes of the

1 record I am providing the Board with a copy of a
2 letter. The letter is dated May 31st, 1989. It is a
3 letter from me to all of the parties receiving
4 full-time correspondence. The letter contains
5 corrections to the statement of evidence for Panels 12
6 and 13, and if you go over to the second page...

7 Do you need another copy? I have one
8 more at least.

9 THE CHAIRMAN: Okay.

10 MS. MURPHY: I would just like to note
11 for the record, if you go over to the second page, in
12 the letter I am advising that we are attaching certain
13 documentation. For the record, I would just like to
14 advise that this particular document is being provided
15 now without the attachments. Those attachments will be
16 proved and filed through individual witnesses.

17 So I would just suggest that we mark the
18 additional documentation as not attached at this time
19 point in time and then mark that letter as Exhibit 605.

20 THE CHAIRMAN: Did you have more than one
21 additional copy of this letter?

22 MS. MURPHY: Yes, I have.

23 THE CHAIRMAN: Can we have two more,
24 please.

25 MS. MURPHY: (handed) Again, Mr.

1 Chairman, these are copies without the attachments.

2 The attachments will appear...

3 ---EXHIBIT NO. 605: Letter dated May 31st, 1989.

4 MS. MURPHY: I am not certain whether you
5 will want to mark this as an exhibit, but I think it
6 might be wise. We don't normally mark legislation, but
7 what I have done is I have the federal Pest Control
8 Products Act and the Ontario Pesticides Act reproduced
9 and bound together.

10 I expect that from time to time there
11 will be references to this legislation and I thought it
12 might be more convenient if we are all using the same
13 edition and in the same book.

14 THE CHAIRMAN: Any counsel have any
15 objections to it coming in as an exhibit?

16 THE CHAIRMAN: Very well. Exhibit 605.

17 MR. FREIDIN: 606.

18 THE CHAIRMAN: I am sorry, I guess I
19 forget to mark this letter as well. That will be
20 Exhibit 605. The legislation will be Exhibit 606.

21 MS. MURPHY: (handed)

22 THE CHAIRMAN: Thank you.

23 ---EXHIBIT NO. 606: Reproduction of the federal Pest
24 Control Products Act and the
Ontario Pesticides Act.

25 MS. MURPHY: Mr. Chairman, one of these

1 witnesses is previously sworn but the rest of them
2 aren't, and I would suggest that this is the time to
3 swear the witnesses and Ms. Krishka would prefer to
4 affirm.

5 THE CHAIRMAN: I am sorry?

6 MS. MURPHY: I am sorry, Ms. Krishka
7 would prefer to affirm.

8 THE CHAIRMAN: Okay. Thank you. Would
9 everyone step forward who hasn't been previously sworn,
10 with the exception of Ms. Krishka, up here, please.

11 J. JOSEPH CHURCHER,
12 EDWARD ISKRA,
13 ROBERT L. GALLOWAY,
14 ROBERT A. CAMPBELL,
MICHAEL EDWIN BUSS, Sworn
PETER PHILLIP HYNARD, Recalled
CINDY STERN KRISHKA, Affirmed

15 MS. MURPHY: Mr. Chairman, the first
16 witness on your far left is Dr. Bob Campbell. Dr.
17 Campbell is an expert in the use of herbicides for
18 forest management and we would ask that he be so
19 qualified.

20 I am sorry. Dr. Campbell is an expert in
21 the use of herbicides for forest management and we
22 would ask that he be qualified as such.

23 THE CHAIRMAN: Any objections to that
24 qualification?

25 (no response)

1 Very well. He will be qualified as an
2 expert in that area.

3 MS. MURPHY: The next witness sitting
4 beside Dr. Campbell is Mr. Rob Galloway, and since Mr.
5 Galloway's curriculum vitae was completed he has taken
6 on a new job. He is now the Co-ordinator of Northern
7 Forest Development Group.

8 Mr. Galloway, I understand that is
9 similar to the technology development units that the
10 Board has heard about in the past?

11 MR. GALLOWAY: That's correct.

12 MS. MURPHY: Mr. Chairman, Mr. Galloway
13 is a professional forester specializing in boreal
14 silviculture with experience in timber management
15 planning and technology transfer. We would ask him to
16 be qualified as such.

17 THE CHAIRMAN: Any objections?

18 (no response)

19 Thank you. He will be so qualified.

20 MS. MURPHY: And sitting beside Mr.
21 Galloway of course is Peter Hynard, he is previously
22 qualified.

23 THE CHAIRMAN: Very well.

24 MS. MURPHY: Next to Mr. Hynard is Ms.
25 Cindy Krishka. Ms. Krishka is a professional forester

1 specializing in the area of boreal, vegetation
2 management and field assessments and we would ask that
3 she be qualified as such.

4 THE CHAIRMAN: Sorry, that's boreal
5 vegetative...?

6 MS. MURPHY: Boreal vegetation management
7 and field assessment.

8 THE CHAIRMAN: Any objections?
9 (no response)

10 So qualified in that area.

11 MS. MURPHY: Next to Ms. Krishka is Mr.
12 Mike Buss. Mr. Buss is a wildlife biologist with
13 expertise in integrated resource management, habitat
14 management and fisheries management in particular in
15 the Great Lakes/St. Lawrence Forest region.

16 THE CHAIRMAN: Any objections?
17 (no response)

18 So qualified. Thank you.

19 MS. MURPHY: The next witness is Mr.
20 Churcher. Mr. Churcher is a professional entomologist
21 with expertise in forest entimology.

22 THE CHAIRMAN: Any objections to that
23 qualification?

24 (no response)

25 Thank you. He will be qualified in that

1 area.

2 MS. MURPHY: And sitting beside Mr.
3 Churcher is Mr. Iskra. Mr. Iskra is an expert in
4 operational management of pesticide application
5 projects and also worker training.

6 THE CHAIRMAN: Any difficulty, counsel?
7 (no response)

8 So qualified. Thank you.

9 MS. MURPHY: Finally, I will mention Mr.
10 Nicholson. Based on his curriculum vitae, Mr.
11 Nicholson is an expert in pesticide applications
12 technology and worker training and in the development
13 of the Ministry of Natural Resources' policies and
14 procedures governing pesticide applications.

15 THE CHAIRMAN: Any objections?
16 (no response)

17 Very well. He will be qualified in that
18 area.

19 MS. MURPHY: Thank you. As you will
20 recall, Mr. Chairman, Mr. Nicholson had some difficulty
21 being here for the entire evidence but he will be here
22 on Thursday to provide his evidence-in-chief and we
23 will know then for certain at what stage he will be
24 able to appear in order to be here for
25 cross-examination.

1 I expect he will be here for at least
2 part of the following week and thereafter until the
3 cross-examination is complete.

4 THE CHAIRMAN: Thank you.

5 MS. MURPHY: Now, in putting these two
6 panels together, Mr. Chairman, we actually had a little
7 bit of difficulty ourselves in sort of explaining and
8 sorting out how the evidence fits together and what we
9 ended up doing for our own purposes was putting
10 together a little flow chart and we thought once it was
11 completed it would be useful for you and for the other
12 parties to see that flow chart to see what the various
13 witnesses will discuss and how it fits together.

14 (handed)

15 THE CHAIRMAN: Thank you. That will be
16 Exhibit 607.

17 ---EXHIBIT NO. 607: Flow chart prepared by MNR.

18 MS. MURPHY: And I propose to just take a
19 couple of minutes to explain this and I actually had
20 this put on an overhead, although I swore up and down
21 that I would never do that, but I think it probably
22 would help.

23 THE CHAIRMAN: I think if we had the
24 lights off it would make it easier to read the
25 overhead.

1 MS. MURPHY: The document that we have
2 handed out is an exact copy of the overhead, but it is
3 helpful I think for us to just take a quick look
4 through this because, as you have pointed out yourself,
5 Mr. Chairman, some of the information that is being led
6 by these witnesses has some overlap and it will help us
7 in following the evidence to be able to see which parts
8 are being dealt with by which person.

9 The witnesses have pointed out to me that
10 there is no out arrow on this but I promise that we are
11 going to finish.

12 If we start in the upper left-hand
13 corner, No. 1, you will see that Peter Hynard will be
14 the first witness and he will be dealing with the
15 activity of tending, he will be focusing on manual and
16 mechanical tending.

17 And if you look down the side there is a
18 list of the various kinds of tending. These are the
19 things that Mr. Hynard will be dealing with: Thinning,
20 pruning, salvage cutting, improvement cutting, other
21 intermediate cutting and cleaning. So you will be able
22 to follow the matters that Mr. Hynard will be dealing
23 with by looking at that chart.

24 The second witness beside Hynard you will
25 see a 2, Dr. Campbell. Dr. Campbell will be dealing

1 with herbicides and he will be talking about the use of
2 herbicides for tending and site preparation. You will
3 recall in Panel 11 there was some discussion of the use
4 of herbicides in site preparation and you were advised
5 that the particular products used and how they were
6 used would be discussed in this panel and this is the
7 place where that discussion will be.

8 Dr. Campbell will be talking about the
9 products that are registered for use, how they are
10 used. He will be discussing briefly ground
11 applications and he will also be giving some
12 information about how much of these products are used
13 in forestry and in forestry as compared to other uses.

14 If you continue down you will see the No.
15 3. No. 3, Mr. Galloway will discuss cleaning. That is
16 one of the tending treatments and it is important for
17 you to note that when Mr. Galloway discusses cleaning
18 he will be discussing all techniques.

19 His evidence is not limited to the use of
20 herbicides for cleaning, he will be discussing the
21 various ways one can go about cleaning, particularly in
22 the boreal forest. He will be discussing how decisions
23 are made, he will be talking about the assessments of
24 alternatives, and he will be discussing why aerial
25 application of herbicides in the boreal forest is the

1 most common technique.

2 If you look beside that box you will see
3 No. 4. Again, this is further information on cleaning.
4 Again, this evidence also deals with all techniques.
5 This is the evidence of Ms. Krishka and what Ms.
6 Krishka will be talking about at this point is whether
7 the treatments that are chosen meet objectives. So
8 Ms. Krishka will be talking about efficacy and
9 effectiveness of cleaning treatments.

10 Now, Ms. Krishka's evidence is broken
11 into two parts, so if you go down you will also see
12 another No. 4. Again, that's Ms. Krishka and she will
13 be giving you some information on the effects of
14 tending and that's all types of tending on the forest
15 estate. The evidence there is very similar to evidence
16 you have heard earlier so her evidence-in-chief there
17 will take about 15 minutes.

18 If you look beside that box then you will
19 see No. 5. No. 5 is the part where the effects of
20 tending with the exception of herbicide use on the
21 aquatic and terrestrial environment will be discussed
22 by Mr. Mike Buss.

23 Again, some of these matters are things
24 you would have heard about before and we won't be
25 covering old ground, but Mr. Buss will be discussing at

1 a certain level of detail some new information on the
2 Great Lakes/St. Lawrence forest. So those are all the
3 yellow boxes that you can see on the overhead.

4 And if you go then to the upper
5 right-hand corner you will see there the No. 6. No. 6
6 is the section where Mr. Churcher will be discussing
7 protection. In particular he will be talking about
8 primarily insect control, he will be discussing
9 alternative methods of insect control, he will be
10 talking about insecticide use and discussing the
11 products that are registered for use for that purpose.

12 If you then look at -- here it is an
13 orange box, on the black and white copy you will see
14 the Nos. 7 and 8 above it. In that box you are seeing
15 the evidence of two witnesses, Nicholson and Iskra.
16 That evidence relates both to the use of herbicides and
17 the use of insecticides.

18 In that particular box those witnesses
19 will be discussing aerial applications of herbicides or
20 insecticides. They will be talking about the
21 operations and planning of those operations, and we
22 have noted here they will also be discussing at the
23 operational level some of the process requirements and
24 some of the notices involved in both ground and aerial
25 applications.

1 You will note then that there are two
2 boxes that have a No. 9 over them. Those are two areas
3 of evidence that will be dealt with by Mr. Peter
4 Kingsbury.

5 As you can recall, we have asked to have
6 Mr. Kingsbury called in August and that's our plan at
7 this time to deal with those matters, effects of
8 herbicides on the aquatic and terrestrial environment,
9 as well as the effects of insecticides on the aquatic
10 and terrestrial environment.

11 That leaves with us with that large box
12 at the bottom, effects and mitigation and in that box
13 the socio-economic effects. And here -- what we tried
14 to do in this box is put some basic information about
15 the evidence on socio-economic effects of all tending
16 methods.

17 So what we did was we said: What are the
18 potential socio-economic effects of tending or
19 protection that are perhaps different and that bear
20 some discussion. And basically the items that we have
21 listed here are the economic effects. The other items
22 we have noted are aesthetics, worker safety, toxicity
23 concern with respect to human and wildlife toxicity
24 concerns, indirect effects from habitat change and that
25 indirect effects from habitat change resulting from

1 tending and how that -- how all tending affects that.
2 To some degree these matters are discussed by a number
3 of witnesses.

4 THE CHAIRMAN: Ms. Murphy, when you are
5 dealing with 9, particularly the big box--

6 MS. MURPHY: Yes.

7 THE CHAIRMAN: --how are you planning to
8 handle that taking into account the Board's ruling last
9 week on the human health effects?

10 MS. MURPHY: Well, what we are planning
11 to do is the following -- first of all, taking into
12 consideration the Board's ruling, we have instructions
13 now to do the following:

14 Our original intention was to have some
15 of these witnesses discuss the federal regulatory
16 processes. Given the interest that was shown in this
17 matter in the recent motion and in the scoping session,
18 there is clearly an interest in examining how human
19 health concerns are dealt with in the federal
20 regulatory process and we see it as a useful matter to
21 bring further evidence to the Board to demonstrate to
22 the Board that it is reasonable for the Ministry of
23 Natural Resources and the Board to place a good deal of
24 reliance on that process.

25 We would like to ensure that you get the

1 best evidence possible about that matter and, for that
2 purpose, we have asked Dr. Len Ritter to appear to
3 speak as a witness to the Federal regulatory process,
4 how it works and how that process deals with human
5 health effects.

6 Dr. Ritter has personal day-to-day
7 involvement in that process and he's the best person we
8 know of that we can bring to this Board who can
9 describe how the process works and answer questions.

10 MR. MARTEL: Is he coming in on this
11 panel or a later panel?

12 MS. MURPHY: Well, at this point what I
13 would like to do, I have asked him if he could be
14 available in August so that we can deal with these
15 matters and get these matters dealt with and move on to
16 14 and he's willing to do that.

17 THE CHAIRMAN: Okay. But with respect to
18 the documentation, would you be filing a supplementary
19 witness statement with respect to Dr. Ritter's evidence
20 beyond just the filing of his report which was
21 contained in the witness statements for the panel, No.
22 1.

23 Then No. 2, if you are planning to file
24 something further, it would be helpful I think if the
25 Board held a scoping session with respect to that

1 evidence in particular so that we all had a firm
2 understanding of the scope of this evidence and just
3 how far and wide ranging it may or may not be.

4 MS. MURPHY: Right. And I anticipated
5 that question, Mr. Chairman, obviously and we do not
6 intend to file any documentation other than the paper
7 by Ormrod and Ritter that was provided with Panel 12.

8 THE CHAIRMAN: Go ahead.

9 MS. MURPHY: So if I can go back to your
10 original question. I thought it might be helpful. It
11 advises in that box that all witnesses are speaking to
12 some aspect of the information that is listed there
13 under socio-economic effects and mitigation, and I
14 would just point out for your information that on the
15 economic part of that evidence there will be
16 information from Mr. Galloway, Mr. Hynard and Mr. Buss.

17 On aesthetics there will be some
18 information from Mr. Galloway. On worker safety there
19 will be information in the evidence of Mr. Galloway and
20 Mr. Nicholson. On toxicity concerns with respect to
21 human and wildlife; that is, the concerns and that is
22 also mitigation, there will be evidence then from Mr.
23 Ritter about how the federal regulatory - Dr. Ritter,
24 excuse me - about how the federal regulatory process
25 works. There will be evidence from Mr. Kingsbury and

1 there will also be evidence from Mr. Galloway with
2 respect to concerns and from Mr. Nicholson and Iskra
3 with respect to the process requirements of the
4 Ministry of Natural Resources and the methods used to
5 give information and provide information to the public.

6 So I hope having sort of an overview
7 helps because it is a little complex to follow what is
8 going on when we have this many witnesses.

9 THE CHAIRMAN: Thank you, Ms. Murphy.

10 And the Board wants to again commend the
11 Ministry for rearranging its case to combine these two
12 panels. The Board finds it very helpful where we can
13 and where we observe that some issues overlap in the
14 interest of expediting this hearing to do just that,
15 combine where we can various portions of the evidence
16 so that we will speed up the process to the extent that
17 we can and still provide for a fair hearing.

18 Thank you.

19 Mr. Freidin, just before you go on, if
20 Mr. Mander is listening on his little listening device
21 would he mind coming into the hearing room when he can.

22 Thank you.

23 MR. FREIDIN: Mr. Chairman, I should just
24 advise that I'm going to be examining the first two
25 witnesses Mr. Hynard, Dr. Campbell, and also I will be

1 examining Mr. Churcher I guess later in the week, and
2 Ms. Murphy will be leading the evidence of the other
3 witnesses.

4 Mr. Hynard is going to kick off this
5 panel, I think as he has done in the last two. It's
6 the last panel that he's going to kick off.

7 I would like to file perhaps some
8 documents now as exhibits. Firstly, the hard copy of
9 the 15 photographs which are listed in his paper which
10 is Document No. 1 of the witness statement.

11 THE CHAIRMAN: That will be Exhibit 608.
12 And are we going to go through them A, B, D...?

13 MR. FREIDIN: I think probably that is --
14 I think we just listed them as photograph No. 1 in the
15 material. That is how we have done it in the past.

16 THE CHAIRMAN: Okay.

17 ---EXHIBIT NO. 608: Package of hard copies of 15
18 photographs contained in Document
No. 1 to witness statement.

19 MR. FREIDIN: I would also like to mark
20 hard copies of overheads that are going to be used by
21 Mr. Hynard. They are two in number, so perhaps they
22 could be given an A and B designation.

23 THE CHAIRMAN: Very well. Exhibit 609A
24 will be what?

25 MR. FREIDIN: Summary of Tending

1 Treatments Carried out on Crown Lands in the Area of
2 the Undertaking.

3 ---EXHIBIT NO. 609: Two-page hard copy document of
4 overhead entitled: Summary of
5 Tending Treatments carried out on
Crown Lands in the Area of the
Undertaking.

6 MR. FREIDIN: And actually, Mr. Chairman,
7 this should just be -- it's a two-page document. The
8 heading on the second document is identical, it's just
9 further information, further breakdown. (handed)

10 THE CHAIRMAN: Thank you.

11 MR. FREIDIN: I would also like to file
12 four interrogatories which will be referred to by Mr.
13 Hynard in his evidence. They are as follows:

14 Ministry of the Environment Interrogatory
15 No. 2 and 6; Ontario Federation of Anglers & Hunters,
16 Interrogatory No. 4; and Forests for Tomorrow,
17 Interrogatory No. 15. (handed)

18 THE CHAIRMAN: Those can all be given
19 Exhibit 610.

20 ---EXHIBIT NO. 610: MOE Interrogatory Nos. 2 & 6; OFAH
21 Interrogatory No. 4; and FFT
Interrogatory No. 15.

22 DIRECT EXAMINATION BY MR. FREIDIN:

23 Q. Mr. Hynard, I understand that your
24 evidence today is going to be in relation to the paper
25 Document No. 1 in the witness statement which is

1 entitled: Report on Tending in Ontario by Manual and
2 Mechanical means?

3 MR HYNARD: A. Yes, sir, it is.

4 Q. And could you perhaps begin by
5 advising the Board what the main messages of your
6 presentation are?

7 A. Yes. I have three main messages that
8 I would like to give and ask you to keep in mind during
9 the course of my direct evidence. And the first one of
10 those messages is that silvicultural treatments come in
11 packages and tending operations are an inseparable part
12 of the silvicultural system.

13 Q. Excuse me, Mr. Hynard.

14 THE CHAIRMAN: Where is -- what page is
15 your paper?

16 MR. FREIDIN: 107 I believe.

17 THE CHAIRMAN: Thank you.

18 MR. HYNARD: Before I begin, Mr.
19 Chairman, I should point out that I have tried to do --
20 I will be trying to do today what I have done in the
21 past and; that is, to focus on the issues that have
22 been raised in statements of issue and interrogatories
23 and to concentrate my direct evidence today on those
24 topics and to cut out in my direct evidence this
25 afternoon those areas that were not of great interest

1 to other parties.

2 Therefore, any material that I skip this
3 afternoon can be found in Document No. 1 of the Panel
4 12 statement of evidence.

5 Perhaps I should put the table of
6 contents for the afternoon on the overhead and then
7 everyone can have a look at it.

8 THE CHAIRMAN: It is in the witness
9 statement, so I don't think you have to shut the lights
10 out. I guess everyone has it.

11 MR. HYNARD: This is slightly different,
12 Mr. Chairman.

13 THE CHAIRMAN: Oh, it is.

14 MR. HYNARD: This is the table of
15 contents for my direct evidence this afternoon as
16 opposed --

17 THE CHAIRMAN: Oh okay.

18 MR. HYNARD: --as opposed to the
19 statement of evidence.

20 THE CHAIRMAN: Very well. Can everyone
21 see that? You might as well shut off some of the
22 lights. Just turn them down a bit.

23 MR. HYNARD: I have divided it into three
24 parts; introduction or really background information
25 which contains the main messages with the topic of why

1 we tend and the topic of how the tending treatment is
2 chosen and lastly the role of financial analysis in
3 choosing a tending treatment.

4 MR. MARTEL: Mr. Hynard, if I could just
5 interrupt you for a moment, please. You said you had
6 three messages. You gave the first one as
7 silvicultural treatment is a package.

8 MR. HYNARD: Yes.

9 MR. MARTEL: Can you give me what the
10 other two are.

11 MR. HYNARD: Mr. Martel, I haven't -- I
12 will just finish off this table of contents and then go
13 back to it.

14 MR. MARTEL: You just wandered away from
15 it and I thought maybe I had missed the next two
16 points.

17 MR. HYNARD: Yes. I'm sorry, Mr. Martel,
18 I thought perhaps the Board was occupied at the time
19 and I would get this out of the way first.

20 Most of the time this afternoon is going
21 to be looking at some Ontario examples and I have a
22 series of 23 colour slides portraying actual tending
23 examples across Ontario, at least with respect to
24 manual and mechanical tending methods and those items
25 that are listed under Ontario examples on the table of

1 contents will be covered this afternoon.

2 It is not an exhaustive list, it doesn't
3 include all of the treatment types or treatment
4 techniques and for a more complete listing you should
5 turn to the Document No. 1 in the statement of
6 evidence.

7 And the last category that I have on the
8 table of contents there is statistics: How much
9 tending we do and with a breakdown of tending by
10 treatment type and the trends in amount of tending and
11 treatment types over the last few years.

12 MR. FREIDIN: Mr. Chairman, we are just
13 arranging to get a hard copy of this particular
14 document. Perhaps we could save an exhibit number for
15 it.

16 THE CHAIRMAN: Exhibit 611.

17 ---EXHIBIT NO. 611: Table of Contents re: evidence of
18 Mr. Hynard.

19 MR. HYNARD: The first item on that table
20 of contents is the main messages and the first one was
21 that silvicultural treatments come in packages and that
22 tending operations are an inseparable part of the
23 silvicultural system.

24 And to put that in practical terms, it is
25 no more sensible to plant trees and then neglect to

1 look after their tending needs, than it is to prepare a
2 site for planting and then neglect to plant the trees.
3 So tending is an inseparable part of a silvicultural
4 package.

5 Message No. 2 is that in even-aged stands
6 early tending is usually carried out to ensure the
7 survival or success of the newly regenerating stand.
8 Early tending is usually carried out to ensure the
9 survival or success of the newly regenerating stand
10 and in Ontario, most tending activity falls into this
11 category. Without tending, many of these regenerating
12 stands would fail.

13 The third message: You will be hearing
14 evidence on the alternative methods of tending but, in
15 most cases, tending treatments and tending techniques
16 are not directly interchangeable; that is, they are not
17 necessarily true alternatives to each other.

18 The degree to which they are alternatives
19 and the degree to which they can be interchanged will
20 be contained within our evidence.

21 MR. FREIDIN: Mr. Chairman, perhaps this
22 would be an appropriate time to file with the Board the
23 hard copy of the table of contents.

24 THE CHAIRMAN: Okay. That was Exhibit
25 611.

1 MR. FREIDIN: (handed)

2 MR. HYNARD: The second item on that
3 table of contents: Why tend. Forest stands grown for
4 commercial timber production require attention and
5 often treatment during that long period between
6 regeneration and harvest; that is, if they are to
7 produce the volumes and the products intended. And all
8 silvicultural treatments carried out during that period
9 between regeneration and final harvest are known as
10 tending treatments.

11 In even-aged management, tending
12 operations occur as discreet treatments at a specified
13 point in the development of stand of. For example,
14 cleaning treatments are treatments to release desired
15 regeneration from competing vegetation.

16 Cleaning treatments may be prescribed
17 once or they may be prescribed several times on very
18 competition-prone sites, but once the stand has finally
19 outgrown the competition, this treatment type is no
20 longer necessary. So these different treatment types
21 then occur at specified points in the development of
22 the stand.

23 As I mentioned earlier, in even-aged
24 stands early tending is usually carried out to ensure
25 the survival or the success of the newly regenerating

1 stand.

2 Tending treatments carried out after the
3 succession of the new stand has been assured; that is,
4 after free to grow, are typically carried out to
5 augment growth and yield or to increase tree size and
6 value at maturity. All of those comments are with
7 respect to tending carried out in even-aged stands.

8 Stands grown under an uneven-aged regime,
9 tending operations may be integrated with the harvest.
10 For example, an improvement cut to remove low quality
11 immature trees may be integrated with the harvest of
12 the mature trees. The marking of those trees would be
13 done at the same time as the marking of trees for
14 harvest and the removal of those trees would be
15 conducted at the same time as the removal of the mature
16 trees.

17 In an interrogatory the OFIA and OLMA
18 asked us to indicate whether it is the MNR position
19 whether every site will require tending. No, not all
20 sites will. Tending operations are conducted only
21 where necessary to ensure the survival or the success
22 of the new stand and only where the growth -- in older
23 stands, only where the growth response will justify the
24 added investment.

25 So some stands, for example, well spaced

1 jack pine on an outwash sand with relatively little
2 competition may require no tending at all; whereas
3 other stands, such as planted white spruce on a very
4 productive and competition-prone till, may require
5 tending more than once.

6 In their Panel 12 statements of issue
7 OFIA and OLMA raised the question of circumstances in
8 which tending may be appropriate in stands that have
9 already been declared free to grow.

10 You will recall from evidence in Panel 11
11 that free to grow includes three criteria. First of
12 all, the stocking of the new stand, must meet the
13 minimum stocking standards; secondly, it must be a
14 specified height and; thirdly, it must be free from
15 competing vegetation.

16 Stands which were once relatively or
17 adequately free of competing vegetation and declared
18 free to grow can become once again overgrown by
19 competition and I am thinking there of fast growing
20 hardwood species like poplar which present no threat or
21 no apparent threat to the regenerating stand at one
22 point, but which over time eventually outgrew the
23 conifer stand. Tending in such a circumstance
24 certainly would be appropriate.

25 Similarly free to grow status does not

1 take into account competition between trees of the same
2 species. I am thinking here of excessively dense young
3 jack pine stands where the jack pine are in competition
4 with each other. Certainly tending is appropriate in
5 situations like that to reduce the density of the young
6 jack pine.

7 So there are cases when tending is
8 appropriate in stands after free to grow status.

9 The question of fertilization and
10 drainage continues to surface in the statements of
11 issue. Let me repeat briefly for the record that while
12 fertilization and drainage are indeed tending
13 treatments they are not in operational use in Ontario.
14 They do not form part of this undertaking and we are
15 not seeking their approval by the Board.

16 The third item on the table of contents
17 is choosing the tending treatment. First of all, it is
18 the forester responsible for the management of the unit
19 who prescribes all of the silvicultural treatments to
20 be employed on the unit and those prescriptions, be
21 they for harvest renewal or tending, are contained in
22 the silvicultural groundrules of the timber management
23 plan.

24 The Panel 12 statement of evidence said
25 there are essentially five considerations which the

1 unit forester must weigh in selecting the tending
2 treatment and I will just put those five considerations
3 on the overhead. I won't go into them in detail
4 because many of these same items have already been
5 covered in Panels 10 and 11, other than to simply list
6 them.

7 And the first consideration, of course,
8 is the tending needs of the crop given the condition of
9 the regeneration, the condition of the competing
10 vegetation and the forest products that are being grown
11 and by forest products, I mean: Are we growing saw
12 logs, veneer or pulpwood, the objective of management.

13 Second on the list is the silvical
14 characteristics of the species being managed and I
15 should include their the silvical characteristics of
16 the associated vegetation. They are considerations in
17 choice of the tending treatment.

18 MR. FREIDIN: Mr. Chairman, I should just
19 advise that this is a reproduction of basically what is
20 in the witness statement you will find at page 116.

21 THE CHAIRMAN: Thank you.

22 MR. HYNARD: The third consideration are
23 past results of tending treatments under like
24 conditions including those on the unit itself.

25 Item 4 is financial considerations, the

1 costs of the treatment or the treatment package, the
2 expected results and the relative economic efficiency
3 of silvicultural options. Those are considerations in
4 the choice of the tending treatment and indeed the
5 question of tending at all.

6 And the last on the list is the
7 availability of funds for silvicultural investment.
8 They can limit the amount of tending done and the
9 choice of tending done in the same way that they can
10 affect the choice of renewal.

11 The topic of how the decision to conduct
12 tending operations is made is one of great interest to
13 the other parties at the hearing according to the
14 number of interrogatories and statements of issue on
15 that one item.

16 The Nishnawbe-Aski Nation and Windigo
17 Tribal Council asked what other considerations could be
18 weighed in reaching a decision on the choice of
19 treatment. Grand Council No. 3 asked how and if the
20 concerns of native communities are factored into the
21 choice. What consultation with native communities is
22 invited or reviewed.

23 Let me point out that the five factors
24 before you are forestry factors affecting the choice of
25 the decision to treat and how to treat. Other forest

1 uses and values can affect the choice or indeed the
2 decision to treat at all.

3 The manner in which the concerns of
4 interest groups is sought, the manner in which other
5 values are identified and the decision-making process
6 itself in developing operating prescriptions for areas
7 of concern are all matters or Panel 15.

8 At this point let me simply say that,
9 yes, other forest uses and values can affect the choice
10 of the treatment technique and indeed the choice to
11 treat at all within areas of concern. Secondly, the
12 public and interest group input is sought in the
13 identification of areas of concern. Thirdly, every
14 effort is made to accommodate those other forest users
15 who will be directly affected by tending operations in
16 those areas. And, lastly, this is the same timber
17 management planning process for areas of concern to
18 which numerous references have already been made in
19 Panels 10 and 11.

20 Staying on the decision of treating and
21 the choice of the treatment type, the Ontario
22 Federation of Anglers & Hunters asked its usual
23 questions about the direction decision tools and
24 technical support used by unit foresters and about the
25 weightings and ratings used in the evaluation process.

1 I can only restate what I told you in
2 Panels 10 and 11, we do not have a weighted/rated
3 computerized evaluation model. It is the silvicultural
4 groundrules for the unit, the silvicultural groundrules
5 contained in the timber management plan that lay out
6 the prescriptions for tending. Those prescriptions are
7 determined by the unit forester himself, using
8 references such as the silvicultural guides, past
9 experience including past experience of those
10 treatments on his unit, and his professional judgment.

11 Our approach in determining the
12 silvicultural groundrules for tending is essentially
13 the same as that already described to you in some
14 detail for harvest and renewal operations.

15 The Ministry of the Environment
16 questioned the extent to which the silvicultural
17 groundrules provide a sufficient level of detail to
18 predict areas that require tending. You recall that in
19 the timber management plan areas are allocated for
20 harvest operations, renewal and tending operations and
21 the silvicultural groundrules lay out what the
22 treatments will be, what the prescriptions will be.

23 The question was: To what extent do
24 those groundrules provide sufficient detail to predict
25 which area of those allocated for tending will actually

1 require tending. Well, they don't and they can't
2 provide that sufficient detail. Of those areas that
3 are allocated for tending, the actual needs of the crop
4 and the final decision on the tending treatment can be
5 determined only by field inspection.

6 Field inspections may take the form of a
7 regeneration assessment. For example, a free to grow
8 survey may determine that the area is not -- cannot be
9 declared free to grow because of competing vegetation
10 and prescribe the use of a tending treatment. It may
11 be in the form of a special survey, and there I am
12 thinking of tending treatments, for example, for
13 commercial thinnings.

14 But, in most cases, for most treatment
15 areas, the tending needs of the crop are obvious and
16 can be determined by a walk through the area by the
17 forester or one of his staff.

18 The Ministry of the Environment asked the
19 question: How are past results recorded and passed
20 between units. Tending treatments are not assessed in
21 the same formal fashion as regeneration. We do not
22 have special assessments along the lines that you had
23 described to you for stocking and free to grow and
24 survival.

25 However, it is normal Ministry practice

1 to inspect areas which have been tended to ascertain
2 whether the tending objectives have been met and
3 whether the crop has shown or can be expected to show
4 the desired response. Ultimately, of course, areas are
5 assessed to determine whether or not they meet free to
6 grow status.

7 How are past results recorded then and
8 passed between units and unit foresters, and I include
9 company foresters in that same category of course...
10 Well, it is in much the same way as I described to you
11 how past results of renewal efforts are taken into
12 account and related to other foresters. There is no
13 computerized adaptive management model.

14 In Panel 11 I said to you how important
15 the undocumented procedure of foresters and their staff
16 visiting their old treatment projects and revisiting
17 them again over time is in that process, in that
18 feedback of learning from past treatment results and
19 incorporating them into present treatment
20 prescriptions.

21 And I said to you at that time that unit
22 foresters who are interested in a particular treatment
23 type on a particular site type or in a particular stand
24 condition can track down similar projects simply by
25 phoning their colleagues and asking them: Do you have

1 something meeting this description that I can go and
2 see? I have this problem on my unit and I would like
3 to see your past results. That kind of feedback is
4 available to unit foresters.

5 In addition, of course, the MNR's
6 technology development unit and a variety of research
7 agencies publish the results of research work and
8 that's available to all Ministry field officers. In
9 Panel 11, I believe, I explained to you how new library
10 listings are circulated each month to the field offices
11 and how the Maple and Queen's Park libraries offer a
12 full range of library services to field foresters.

13 In their Interrogatory No. 8 Forests for
14 Tomorrow asked for particulars on the expected yields
15 with and without tending treatments for each working
16 group, for each site type in each management unit
17 within the area of the undertaking.

18 This will undoubtedly lead to
19 cross-examination asking to confirm that we don't have
20 this data. We don't have this data. We are unable to
21 provide merchantable yields at rotation for all of
22 those variables. It would require the development of
23 growth and yield tables for each one of those variables
24 and to do so absolutely would require an entire
25 rotation age to collect it.

1 It doesn't mean that it wouldn't be
2 useful, to have it would it be very useful. It would
3 also be collected at great cost and it could not be
4 available immediately at any rate.

5 In the meantime what do we do? One of
6 the things that we can do is adjust normal yield tables
7 for unmanaged stands, such as Plonski's, to account for
8 any differences in species composition, cull factors,
9 stocking factors, regeneration period and rotation age.
10 Those are all factors contained within normal yield
11 tables which can be adjusted to account for changes in
12 the new stand.

13 Yield tables for unmanaged stands cannot
14 account for different behaviour of the new stands based
15 on the fact the trees may be spaced differently. If we
16 are controlling spacing through tree planting, for
17 example, they can't take that into account, but the use
18 of yield tables for unmanaged stands under these
19 circumstances assume that the same species will behave
20 in a similar fashion on the same site.

21 It is worth noting that 87 per cent of
22 the tending operations carried out in 86/87 -- 1986/87
23 were in the form of cleaning treatments and cleaning
24 treatments are prescribed to ensure the survival or
25 success of the newly regenerating stand. In such cases

1 the result of the failure to tend may be the failure of
2 the stand, and by failure I mean the failure to meet
3 the minimum stocking standards or free to grow status.

4 In other words, ensuring the survival of
5 the stands assures its continued productivity and its
6 failure to tend may be in its failure to contribute
7 towards the maximum allowable depletion.

8 The next item on the table of contents
9 was the role that financial analysis plays in making
10 silvicultural decisions. I thought that I had
11 satisfied or perhaps exhausted the interest in the
12 subject of financial analysis in forestry decisions,
13 but apparently not. There were questions on it.

14 The OFIA/OLMA asked whether tending
15 efforts were conducted to protect existing investments
16 as well as being considered investments in themselves.
17 The Ministry of the Environment is interested in the
18 extent to which financial analysis dictates management
19 decisions. They asked under what circumstances would
20 manual cleaning methods be chosen over chemical when
21 they are more costly and unjustifiable financially.

22 Mr. Chairman, you made me promise not to
23 repeat evidence from Panel 10, I would like to just
24 reiterate a couple of basic facts and the first one of
25 those is that financial considerations and economic

1 efficiencies do not dictate silvicultural practice,
2 they represent another factor that foresters must
3 consider in making silvicultural decisions.

4 Secondly, field foresters use financial
5 analysis to varying degrees. Some routinely conduct
6 numerical analysis and some never. All, however,
7 consider the factors that make investments productive
8 and those factors are namely cost, cost of treatment;
9 risk, the risk that the treatment will not achieve the
10 desired results; the expected results or outcome; and
11 the time, the time that it takes to produce the crop.

12 Thirdly, financial analysis is used in
13 deciding between silvicultural options. Foresters have
14 choices, they could treat this hectare or they could
15 treat this other hectare over there. They could treat
16 it in this fashion or they could treat it in another
17 fashion. We use financial analysis as one
18 consideration in deciding between silvicultural
19 options. We do not use it in deciding between
20 competing land uses, especially between competing land
21 uses, those which have a dollar value as opposed to
22 those to which a price tag cannot be easily assigned.

23 So the answer to the Ministry of the
24 Environment question is: Yes, costly or manual
25 cleaning methods may be selected over chemical methods

1 in areas of concern where the use of herbicides has
2 been ruled inappropriate by the timber management
3 planning team, and where competition controlled by
4 manual methods is feasible. And that's what it says on
5 page 121 of the Panel 12 statement of evidence.

6 The fourth basic fact. Silvicultural
7 treatments come in packages of which the tending
8 component may be an inseparable one. Yes, tending is
9 an investment in itself and, yes, it may also be the
10 protection of an existing investment. If the ability
11 to tend using cost effective means in normal operating
12 areas were to be lost, then the ability to regenerate
13 pine and spruce on some common site types would be lost
14 also.

15 That's why the groundrules of all FMAs
16 contain this statement, and I am reading here from
17 paragraph 67 of the groundrules of FMA 501100 which is
18 Exhibit 513.

19 MR. FREIDIN: That was the FMA agreement
20 that we dealt with in the interrogatory. Mr. Chairman,
21 I understand that your copies are on the way from
22 Toronto, but I think it is just a short little portion
23 that Mr. Hynard wants to refer to.

24 THE CHAIRMAN: Very well.

25 MR. HYNARD: That paragraph reads, and I

1 quote:

2 "The parties agree in the event that
3 appropriate herbicides are not or cease
4 to be licensed for forestry use in
5 Ontario or where the company has refused
6 the authority to tend specific areas, the
7 company's obligation to tend, if
8 necessary, will no longer hold. On areas
9 where regeneration has already been
10 initiated, the company will not be
11 required to retreat failure if such
12 failure is agreed to be the result of
13 the unavailability of such herbicides.
14 On areas where regeneration has not been
15 initiated, the Minister reserves the
16 right to refuse to approve any
17 regeneration treatment that may be
18 expected to fail if tending cannot be
19 done because of the lack of suitable
20 herbicides."

21 Financial analysis may be applied against
22 the single treatment where that single treatment can be
23 isolated, but because treatment so often come in
24 packages the analysis is usually of the package.

25 Financial analysis of silvicultural

1 packages can be found in the decision-making model for
2 forest managers using economic considerations, which is
3 exhibit -- Mr. Freidin?

4 MS. BLASTORAH: 603C.

5 MR. HYNARD: 603C. I have produced a
6 second example that I would like Mr. Freidin to file at
7 this time.

8 MR. FREIDIN: It is a document entitled:
9 A Real Example Demonstrating Financial Considerations
10 in Making Silvicultural Decisions.

11 THE CHAIRMAN: That will be Exhibit 612.

12 ---EXHIBIT NO. 612: Document entitled: A Real Example
13 Demonstrating Financial
14 Considerations in Making
Silvicultural Decisions.

15 MR. HYNARD: That example is an analysis
16 of a single tending treatment which can be carried out
17 and analysed in isolation from others. It is a real
18 example from my own unit. It involves the question of
19 whether pre-commercial thinnings in second growth maple
20 stands are worthwhile, especially in the absence of
21 studies which document growth response to this type of
22 treatment.

23 What I would like to do is very briefly
24 walk you through that exhibit so that you can
25 understand how financial considerations play a part in

1 making -- helping to make that decision whether to tend
2 or not. Well, on the Minden unit we have a tremendous
3 area of second growth -- even-aged, second growth
4 hardwoods that resulted from an era of wild fires and
5 clearcutting operations for chemical wood.

6 If you turn to the fourth page in the
7 exhibit, the histogram showing age class for maple in
8 Minden, you will see the tremendous imbalance in age
9 class towards stands which are ranging in age between
10 41 and 80 years of age. A tremendous amount of maple
11 in that age class.

12 Maple in that stand condition has a
13 tremendous variability in tree quality, as do all
14 unmanaged maple stands. There are some exceptionally
15 good trees and some exceptionally bad trees.
16 Unfortunately in stands which are not tended the trees
17 of poor form may be equal competitors to the trees of
18 good form.

19 The Minden Management Plan prescribes the
20 use of pre-commercial thinnings to raise the production
21 of quality saw logs and veneer; in other words, to
22 select the trees that have good form and good health,
23 identify them and release them from their competitors.
24 That involves a cost to remove the competitors and it
25 is normally done or it has been done in the past by

1 girdling. The prescription is contained on the fifth
2 page of that package which I won't go through. It just
3 provides the details of how trees are selected and how
4 trees are removed.

5 The problem is the treatments of this
6 type have been conducted on the Minden unit for 20
7 years or more, but no studies have been conducted to
8 document the growth response of crop trees. The
9 question is: Are these thinnings warranted as
10 silvicultural investments by MNR, is it worthwhile to
11 do?

12 And the solution is essentially by asking
13 the question backwards: How much growth response would
14 we have to have in order to justify the cost that we
15 are expending on this treatment. We know the costs, it
16 costs roughly \$65 per acre to conduct the treatment.
17 We know how many crop trees are released, the average
18 is about 85 trees per acre.

19 And there is an equation shown on the
20 second page of the exhibit and that equation is
21 essentially asking that question: How much would my
22 value at harvest have to be in order to be equal to the
23 unmanaged stand and recover the additional cost of
24 treatment, and it is solved for that. All the figures
25 are there and I won't go into them, but it is solved

1 there. It says that our value at harvest has to be
2 \$284.36 per acre.

3 On the third page of the exhibit it is
4 solved again as a percentage, again: How much of a
5 percentage gain would that have to be over the
6 unmanaged stand to justify the investment? The
7 solution is 29.6 per cent. We are going to have to get
8 29.6 per cent more value out of this stand in order to
9 justify that treatment.

10 Now, I said there were no studies
11 actually performed to document the growth response.
12 However, foresters on that unit have been boring trees,
13 boring them with increment bores to take a look at how
14 trees respond to that kind of treatment and from the
15 borings that I have obtained individual trees generally
16 show about a 50 per cent gain in diameter increment
17 within five years following treatment, and certainly
18 that diameter gain is held for more than 20 years.

19 In addition, volume gains are even
20 greater because we are now adding that increment on to
21 increasingly large trees. Value gains are even greater
22 because we are now concentrating the growth on trees
23 capable of growing saw logs which have a value added
24 over five times greater than fuel wood or pulpwood.

25 Lastly, the value coming from those trees

1 that have been selected particularly because they have
2 such good quality will be even greater than the average
3 woods run. So the unit forester reckons: Yes, he
4 says, I can easily beat 29.6 per cent and so he
5 concludes that thinnings like that are justified. And
6 this exhibit is an example of how financial
7 considerations are figured into the decision to treat.

8 You are going to be seeing more of that
9 treatment type in a few moments and, in fact, I am
10 going to give you a few borings to actually see how the
11 trees have responded.

12 THE CHAIRMAN: Mr. Freidin, would this be
13 a convenient place for a break?

14 MR. FREIDIN: Yes.

15 THE CHAIRMAN: Okay.

16 MR. FREIDIN: We are sitting until 3:30?

17 THE CHAIRMAN: No, we are sitting until
18 four o'clock actually.

19 MR. FREIDIN: Thank you.

20 THE CHAIRMAN: So we will take a break
21 now for 15 minutes.

22 ---Recess taken at 2:05 p.m.

23 ---On resuming at 2:30 p.m.

24 THE CHAIRMAN: Thank you. Be seated,
25 please.

1 MR. FREIDIN: Mr. Chairman, before we
2 continue, the interrogatories which were filed -- and I
3 am sorry I don't have the exhibit number.

4 THE CHAIRMAN: They were Exhibit No. 610.

5 MR. FREIDIN: 610. The Forests for
6 Tomorrow Question No. 15 refers to three articles. You
7 did not receive those articles. It was my intention to
8 file those, so we will be providing those articles
9 hopefully -- if your Xerox machine is working, it is
10 down at the moment, we will hopefully be able to
11 provide those tomorrow.

12 THE CHAIRMAN: As part of the same
13 exhibit?

14 MR. FREIDIN: Yes, just as the three
15 articles which are referred to in the exhibit.

16 THE CHAIRMAN: Thank you.

17 MR. FREIDIN: Q. Mr. Hynard, I think you
18 were at the stage where you were going to provide some
19 examples of some of the evidence that you have given.

20 MR. HYNARD: A. I have a series of 26
21 coloured slides that portray 10 different actual
22 examples, some of which are pictures taken over time,
23 several years apart, as I have done in the past. And
24 these are examples of tending treatments and tending
25 techniques other than herbicide spray.

1 These pictures represent only 10 actual
2 examples, so that for a more complete listing you
3 should turn to the statement of evidence for Panel 12.
4 Before going on any further though, I would like to
5 distinguish between tending treatments and tending
6 techniques.

7 Tending treatments are those
8 silvicultural interventions carried out at some point
9 between the regeneration and harvest stages of a stand.
10 Tending treatments are categorized according to
11 world-wide recognized forestry terminology.

12 Tending techniques, on the other hand,
13 are simply the methods that are used to effect the
14 treatment. These may be universally recognized methods
15 or they may be local adaptations to suit local
16 conditions. The five considerations that are on the
17 overhead in front of you are considerations affecting
18 the choice of the tending treatment, not the technique.

19 Again, the technique is simply the local
20 methods by which the treatment is effected. For
21 example, a cleaning is a silvicultural treatment to
22 release a young stand from competing vegetation. The
23 technique may be by manual methods and the choice of
24 those manual methods would be based very much on local
25 practical considerations. It could be done with brush

1 saw, brush saws equipped with herbicide applicators,
2 sand picks, axes, any number of methods or techniques
3 in order to effect that treatment.

4 The OFIA and OLMA asked the question in a
5 statement of issue I believe: What are the factors
6 that affect the choice of the tending technique?

7 Well, those factors are all practical
8 factors, things like access, for example. Chemical
9 methods would certainly be far more practical than
10 manual methods on areas that lack access for workers.
11 Don't forget that by the time the crop needs a tending
12 the roads, the secondary and tertiary roads may have
13 fallen into disrepair or they have even been planted
14 up, certainly tertiary roads. It is possible that the
15 road was ripped up and planted up at the same time as
16 the treatment. So access is a practical consideration
17 affecting the technique used.

18 Terrain and site are other practical
19 considerations, getting men and equipment across a
20 piece of ground. For example, it may not be practical
21 to conduct thinning by commercial logging operations
22 when conditions are extremely rough or extremely wet.
23 I am thinking here of ground that is extremely rough or
24 extremely well.

25 The third practical consideration would

1 be the availability of labour and there is another
2 labour consideration and that is worker safety for
3 manual operations. Those are practical considerations.

4 Equipment availability, any type of
5 machinery or equipment necessary to effect treatment.
6 If it is not available in any particular area it simply
7 wouldn't be used and you will see an example in a
8 picture coming up of a very small mechanical harvester,
9 shortwood harvester doing a commercial thinning. If
10 you didn't have that equipment available you wouldn't
11 be able to use it and yet the amount of that kind of
12 treatment and its profitability may not justify
13 investing in it. Those are practical considerations.

14 And of course economics, and I am talking
15 here the choice between techniques again or methods.
16 All things being equal, I always prefer the cheaper
17 method. After all, there are a lot of hectares out
18 there that need tending and the cheaper the treatment
19 the more hectares will be tended with the dollars that
20 are available to us.

21 Is the list of those practical factors
22 complete? No, I don't consider it complete. I am sure
23 there are a lot of other practical considerations in
24 the choice of technique that I haven't thought about
25 that will be -- that will affect the choice of a

1 technique used in any one particular spot.

2 Now, I would like to go to the slides.

3 MR. FREIDIN: I am going out here, Mr.
4 Chairman, I have no idea where the switch is.

5 MR. HYNARD: Let's look at cleaning
6 first.

7 MR. FREIDIN: That's a reproduction from
8 page 119 of the witness statement.

9 MR. HYNARD: Cleanings are tending
10 treatments that are carried out in very young stands
11 not past the sapling stage with a purpose to release
12 the desired regeneration from the competing vegetation.
13 Cleaning treatments are also known by the term release
14 treatments. So if you hear the term release you can
15 usually equate it to cleaning.

16 Cleanings are most commonly prescribed to
17 ensure the survival or success of the newly
18 regenerating stand. And on that picture, Figure 1,
19 here is a stump left from the harvest of the previous
20 stand, here is another one, here is our desired conifer
21 regeneration here, here and here and it is overtopped
22 by hardwood species. (indicating)

23 A cleaning treatment would be conducted
24 to release the desired conifer regeneration from the
25 competing vegetation. In Ontario most of this kind of

1 work is done in the boreal forest to release conifers
2 from brush and hardwoods by aerial herbicide
3 application.

4 This is photograph No. 9 from the
5 statement of evidence. It shows a worker performing
6 manual cleaning using a brush saw. This saw has a
7 circular saw blade much like a skill saw blade and a
8 gasoline-powered engine which is at the end of the
9 shaft just beyond the picture to the right.

10 The Occupational Health and Safety Act in
11 its regulations require that workers be provided and
12 use protective equipment. This worker is equipped with
13 a hard hat, hearing protection, a face screen to
14 prevent eye injury and he will be wearing steel-toed
15 and steel shank safety boots.

16 In addition, the design of the saw itself
17 has a long shaft, there is a harness on the worker that
18 prevents that saw blade getting close enough to touch
19 any part of the worker. This cleaning treatment is
20 actually a juvenile spacing of an excessively dense
21 young jack pine stand in Atikokan District.

22 Chemical methods are obviously out of the
23 question here since the crop trees and the competitors
24 are the same species. So in this case chemical
25 cleaning is not an alternative to manual. What he is

1 doing is cutting down jack pine in order to leave well
2 formed trees spaced at a proper distance.

3 The issue of chemical versus manual
4 methods to effect cleaning treatments is obviously one
5 that is of great interest to the parties based on the
6 number of interrogatories and statements of issue.

7 In my statement of evidence I said that
8 manual cleaning methods may be used in circumstances
9 where the desired regeneration is vulnerable to the
10 herbicides available. Obviously that is the case here.
11 There is no herbicide that will release the jack pine
12 from the other jack pine. It is also true to some
13 extent of white pine being released from hardwoods.

14 The Ministry of the Environment asked us
15 to list those other values that would preclude
16 herbicide use. Grand Council No. 3 asked how areas of
17 concern are identified and at what level these
18 decisions are made. Again, what consultation with
19 native communities is invited.

20 The Ontario Federation of Anglers &
21 Hunters asked for examples in cases where aerial spray
22 had been precluded by other values. These are
23 questions and matters that pertain to timber management
24 planning and they have been answered to some degree
25 already in Panel 7 and they will be covered in detail

1 in Panel 15.

2 I have been warned that if I go on
3 talking about management planning there won't be a
4 Panel 15 and I don't want to take the pleasure away
5 from those lucky witnesses so I won't, but I don't want
6 to evade the questions either. So I have asked Mr.
7 Freidin to include those in the interrogatories that he
8 filed earlier this afternoon.

9 MR. FREIDIN: Those three, Mr. Chairman,
10 are MOE 2 and 6, OFAH 4.

11 MR. HYNARD: The OFIA and OLMA had
12 questions about the effectiveness of manual cleaning
13 methods. Their question was: Do manual methods
14 control the root systems of species that sucker or
15 sprout, species like most hardwood and brush species.
16 Under what circumstances they asked would manual
17 methods be most likely or unlikely to be effected --
18 sorry, effective.

19 What does feasible mean in reference to
20 circumstances where it is feasible to control the
21 competition. How much manual cleaning results in
22 retreatment. These were all questions posed to us by
23 the OFIA and OLMA.

24 We're back here to Figure 1. If we are
25 talking about the release of spruce and pine from

1 overtopping hardwoods especially poplar it is true that
2 simply cutting these trees down, these competing trees
3 down would result in their resuckering or resprouting.

4 If our circumstances here and if you
5 look -- let's just draw a little scenario here, let's
6 say that these are jack pine, let's say that they are
7 slowing down in growth rate as a result of suppression
8 from this overtopping hardwood, let's say that the
9 overtopping hardwood is poplar and it's considerably
10 over the regeneration and let's say that we are on a
11 very productive site.

12 We could be dealing with an absolutely
13 hopeless situation for manual cleaning methods for the
14 simple reason that cutting those trees down would
15 result in their resprouting and a two metre high poplar
16 can be back to two metres high in one to two growing
17 seasons. Similarly, if the competition was grass and
18 raspberries, it's back in about two weeks or two
19 months. Manual methods do not control the root system.

20 So what does feasible to control hardwood
21 competition mean. It means practical and possible,
22 possible in a practical sense. So it must be applied
23 only in those situations where it is feasible. Jack
24 pine can be released from poplar on a less productive
25 site if the area has been intensively site prepared, if

1 the jack pine has been given a very fast start and a
2 good lead and if we are dealing with large, well formed
3 jack pine and less vigorous poplar because of the
4 nature of the site, manual methods may be feasible and
5 effective in a situation like I have just described.
6 Manual methods will cost more and retreatment may be
7 necessary even under those circumstances.

8 MR. FREIDIN: The photograph that Mr. --
9 the second photograph that he showed, I am not sure
10 whether he indicated for the record that it was
11 photograph No. 9.

12 THE CHAIRMAN: Yes, he did.

13 MR. FREIDIN: He did.

14 MR. HYNARD: That's a dollar, Mr.
15 Freidin.

16 MR. FREIDIN: I'm happy to pay.

17 MR. HYNARD: This is photograph No. 1
18 from the statement of evidence, Document 1. Here we
19 are back in Atikokan District in the same project area
20 as photograph No. 9.

21 You can see that this young jack pine
22 that has been left - and I am pointing to it with the
23 indicator here - is in a much better situation than it
24 was a few moments ago. Our worker with the brush saw
25 has cut down all of these other jack pine in this

1 excessively dense young regenerating stand.

2 You will recall from the evidence in
3 Panel 11 that natural jack pine regeneration can be
4 delayed for three years or even longer after
5 scarification treatment. The reason for that is the
6 cones must open and the seed must fall out and find a
7 receptive spot and germinate. It can be delayed.

8 Treatments like this must also be delayed
9 because you are going to be getting continuing ingrowth
10 for up to five years after the treatment. So there is
11 no sense in doing a spacing treatment sooner than five
12 years after renewal treatment.

13 On the other hand, it doesn't pay to wait
14 too long. The longer you wait the bigger these trees
15 are and the more costly it is to effect the treatment.
16 So if you can time your manual cleaning -- this is
17 called juvenile spacing, because we are trying to space
18 these young jack pine out at a correct density - if you
19 can time that between age five and ten after renewal
20 treatment, it's at a time when no further ingrowth is a
21 threat to the trees and yet before costs begin to soar.

22 Nonetheless this kind of treatment can be
23 very expensive 3- to \$400 per hectare or more depending
24 on the number and size of the jack pine to be removed
25 and it's for this reason, the costliness, that

1 relatively little work of this nature is done.

2 This is Figure 2 from the statement of
3 evidence depicting liberation cuttings.

4 MR. FREIDIN: That is at page 122.

5 MR. HYNARD: Liberation cuttings are a
6 type of cleaning treatment in that they are tending
7 treatments carried out to release young stands not past
8 the sapling stage. And in the picture here we have a
9 young regenerating stand not past the sapling stage;
10 that is this layer of regeneration here, and we have
11 residuals that were left from the previous stand by the
12 harvest.

13 So liberation cuttings may be carried out
14 in this kind of a situation where the residuals, if
15 left, would eventually interfere with the development
16 of the young stand.

17 This is photograph No. 2 from the
18 statement of evidence, it's the first in a series of
19 three pictures depicting or showing a liberation cut to
20 release large tooth aspen from the residual stands of
21 maple, both hard and red maple, white birch and balsam
22 fir. We are looking at the treatment area two years
23 following harvest and treatment.

24 Large tooth aspen is a very intolerant
25 species and it simply would not be able to perform well

1 under a residual canopy. In this case the treatment
2 was effected, the technique used was herbicide
3 injection. And we are now looking at the stand two
4 years following treatment and those large tooth aspen
5 would be in the order of three metres high.

6 This is time lapse photography, so I want
7 you to watch this spot closely and the road especially
8 because our next picture is the same location six years
9 following treatment. And our regeneration is now in
10 the order of seven or eight metres tall. You can see
11 the poplar has been growing well and then you can see
12 the scars from the tertiary road are healing also.
13 Most of the residuals that were treated have since
14 fallen down.

15 This is a picture of that same spot seen
16 from the air. The tertiary road that we were looking
17 at is leading from the municipal road, you can see the
18 municipal road along the lakeshore here. The tertiary
19 road led into the cut to this landing. We were looking
20 at this spot here. You can see that residual --
21 treated residuals still remain throughout the cut-over.

22 This lake system here is a developed
23 cottage lake, it's Kushog Lake and the Kushog Lake
24 Cottagers' Association is one of the local groups that
25 are now organizing themselves or were organizing

1 themselves for aerial spray operations against tent
2 caterpillar. This is another bad year for us for tent
3 caterpillar down our way and this year, for the first
4 time, the cottage associations are starting up their
5 own spray operations to combat that insect.

6 That last picture, the aerial shot, was
7 photograph No. 4 from the witness statement.

8 This picture is photograph No. 11. I
9 mentioned that the technique used on the previous area
10 was herbicide injection and in this technique
11 herbicides are usually injected -- sorry, they are not
12 actually injected into the tree, but rather a wound is
13 cut into the tree, as you can see here, with a complete
14 frill around and then the wound is wet with the
15 herbicide. The herbicide is then absorbed by the tree
16 and goes up the stem and acts upon the leaves and buds
17 thereby killing it. In this case the wound was an axe
18 wound, you can see it here, and then the wound was wet
19 with herbicide.

20 This is the first of two photographs and
21 the one you are looking at was taken immediately after
22 harvest. So the treatment was effected immediately
23 after harvest.

24 This is another time lapse shot. Here we
25 are, photograph No. 12 from the witness statement. The

1 exact same spot, eight years later and that is a
2 treated stem that I am pointing to right here and look
3 at that nice young poplar stand that has resulted from
4 harvest and treatment. The only problem with time
5 lapse photography is that I keep getting older.

6 The OFAH in Panel 10 raised the issue of
7 the degree to which our various methods are
8 alternatives to each other. And just to elaborate
9 here, I would like to say that that degree to which
10 they are alternatives varies from project to project.

11 Because of the vulnerability of large
12 tooth aspen to herbicide if applied from the air,
13 aerial herbicide application in this project is totally
14 out of the question. An alternative in this case to
15 herbicide injection would be felling the residual
16 trees. These trees could have simply been felled with
17 chain saws rather than killed in the fashion in which
18 they were killed.

19 And the choice of that technique or that
20 method, felling versus herbicide injection, is really a
21 practical one. Both are effective, both I have found
22 to be effective on my unit. It's a question of cost.
23 At the time that that treatment was done now, ten years
24 ago, it was cheaper for us to hire workers to do this
25 kind of work, herbicide injection. Today that kind of

1 work is contracted to the licensee. He finds it
2 cheaper to fell the tree rather than do herbicide
3 injection. It's cheaper for him because his feller is
4 already standing beside that tree with a chain saw in
5 his hand and that changes the economics.

6 So the technique, the choice of the
7 technique is largely a practical one. If this area
8 were alongside a snowmobile trail or a travelled road,
9 then that area of concern, the trail or the road, might
10 preclude the use of herbicide injection alongside the
11 trail for the simple reason that those dead trees will
12 pose a safety hazard to people using the trail. And so
13 an area of concern prescription might be to fell the
14 trees along the trail rather than to girdle or use
15 herbicide injection.

16 This is what I mean by the degree to
17 which these methods and treatments are alternatives to
18 each other, very-site specific. Girdling alone without
19 herbicide would not be effective in this case, or not
20 as effective because the poplar, in order to
21 regenerate, needs that light right now. The tree must
22 be dealt with immediately. Girdling alone would take
23 anywhere from one to five years to kill the tree and,
24 therefore, it would be a less satisfactory or perhaps
25 even an ineffective alternative.

1 This is photograph No. 13 from the
2 statement of evidence. The more usual method of
3 herbicide injection is through the use of an injection
4 device such as a Jim-Gem, registered, such as shown
5 here. And the injection device is a long bar and the
6 worker is simultaneously wounding and the device is
7 simultaneously metering out an amount of herbicide to
8 wet the wound at the same time. Dr. Campbell will be
9 giving you more details on this particular piece of
10 equipment.

11 Here you can see here the type of wound
12 that is created on the tree. It has been wet with the
13 chemical and the number of hits on the tree is varied
14 according to the size of the tree. This is photograph
15 No. 14 from the statement of evidence.

16 MRS. KOVEN: Excuse me, Mr. Hynard. Is
17 it red -- is the herbicide red or is that just the
18 effect of the photo?

19 MR. HYNARD: I think they have added a
20 colourant to it.

21 This is photograph No. 10 from the
22 statement of evidence showing how tree girdling is
23 done. Tree girdling is a technique or a method, it's
24 not a treatment. The method -- it's a method of
25 removing trees in which the normal flow of

1 carbohydrates down from the leaves through the inner
2 bark to supply the roots is interrupted by cutting a
3 notch all the way around the circumference of the tree
4 and interrupting that flow of carbohydrates down.

5 Water and nutrient is taken up by the
6 roots, conducted up to the leaves through the sap wood
7 and those leaves produce carbohydrates through
8 photosynthesis and those carbohydrates are then
9 circulated down the stem through the inner bark to
10 supply the tree for it to grow, including the root
11 system.

12 After that notch has been cut around the
13 circumference of the tree that flow downward cannot
14 take place and so the root system in effect is starved
15 and the tree eventually dies. It takes between one and
16 five years to kill a tree, depending on its size and
17 its condition.

18 Large trees, and I am thinking here of 20
19 and 30 inch maples, especially those with cracks and
20 crevices and seams down their sides, are very difficult
21 to kill by this technique because it's very difficult
22 to cut out all the cambium tissue in the cracks and
23 seams.

24 So a technique there might be girdling
25 using a chain saw or a tree girdling device rather than

1 simply by axes. On the other hand, in dealing with
2 species like poplar where the wood is very soft and in
3 small trees, axe girdling is more practical than chain
4 saw girdling.

5 MR. MARTEL: Wouldn't you cut all the
6 tree down? If you are going to go to this trouble of
7 girdling, which is time consuming, why wouldn't you
8 knock the tree down?

9 MR. HYNARD: Well, Mr. Martel, there are
10 several advantages to girdling. One is that girdled
11 trees do not sprout from a stump. So that if the
12 technique were being used as a liberation treatment to
13 release maple seedlings from residual trees, we don't
14 want the larger trees sprouting from the stump.

15 You recall from Panel 11 the coppice
16 maple is not of the same quality as seed origin maple.
17 That is one reason. The second reason is that there is
18 relatively -- we are girdling this tree to release a
19 crop tree beside it, Mr. Martel, and there is very
20 little damage caused to the crop tree by girdling. The
21 tree dies and falls down piece by piece, it doesn't
22 come down all at once and crash into the crop tree. So
23 there is less injury to the crop tree using this
24 technique. Also, it definitely is cheaper under many
25 circumstances than actually going through and felling

1 the entire tree.

2 Girdling as a technique can be used in
3 the release of maple and other hardwoods from
4 competitors and, in this case, it is being used to
5 release white pine that have been pruned from competing
6 poplar trees.

7 I don't know if I mentioned, this is
8 photograph No. 10 from the statement of evidence.

9 This is photograph No. 15 from the
10 statement of evidence and that is the tree that was
11 being released by the girdling of the previous tree. I
12 can't see clearly from here, Mr. Freidin. Is that well
13 focused?

14 MR. FREIDIN: I think it is.

15 MR. HYNARD: In this case here our worker
16 is pruning a white pine tree. You can see the stem
17 that he's pruning here. He has in his hands what is
18 called a pull saw, they are or fitted with extensions
19 and its maximum reach is about 17 feet which is one saw
20 log.

21 Again, workers must be equipped with
22 protective devices. This worker is wearing a hard hat,
23 he's wearing a face screen, a lot of sawdust comes
24 down, he's wearing gloves, he will also have on boots
25 and, in this case, he doesn't need any hearing

1 protection, it's not a very noisy operation.

2 White pine is a species that has a very
3 persistent branching habit. As the stand closes in and
4 the lower branches are shaded, the lower branches die
5 but in white pine those dead branches can persist on
6 those trees for 50 years or a hundred years even.

7 Wood that is grown -- as the tree grows
8 larger, the wood that grows around a live branch
9 produces a sound red knot and in white pine lumber with
10 sound red knots can go into furniture grade.

11 After the branch has died, the lumber
12 that is grown around it produced an unsound knot. That
13 bark layer exists between the knot and the lumber and
14 that is where knotholes come from, that knot can then
15 fall out.

16 White pine lumber that contains unsound
17 knots is sold to you and me in the lumber stores. It's
18 not suitable for high quality, high priced secondary
19 manufacturing.

20 Lumber that is produced following pruning
21 such as this is absolutely clear, free of all knots.
22 White pine lumber like that can go into window sash,
23 and trims and moldings which are high value products
24 and require some secondary manufacturing.

25 Thinning treatments. This is figure No.

1 3 from the statement of evidence. Thinning treatments
2 are tending treatments that are carried out in immature
3 even-aged stands and they are carried out for the
4 purpose of increasing the rate of growth of the trees
5 that remain, thereby raising timber yield at harvest
6 including the wood that is cut from the thinnings or
7 increasing tree size and value.

8 Thinnings can also result in a reduction
9 of the rotation age where timber is being grown to a
10 desired size. In other words, if our trees are growing
11 faster as a result of thinning than they would in an
12 unthinned condition, and if we are growing our trees to
13 a desired size for a certain product, we can get to
14 that size faster if the stand has been thinned.

15 This is photograph No. 5 from the
16 statement of evidence. Stands that are grown under a
17 natural or an unmanaged regime go through a process of
18 thinning themselves. Stands which regenerate with
19 several thousand stems per hectare may have no more
20 than several hundred at the time of their maturity.
21 And this process of self-thinning is a product of a
22 competition between trees for light, space, moisture
23 and nutrients.

24 Generally speaking, in this self-thinning
25 process, those trees which make an early start and gain

1 dominance early are the ones that survive; while their
2 counterparts, those that were overtop a little early in
3 the game and grew as a result a little slower, are the
4 ones that succumb. In some cases self-thinning can
5 result from stem breakage caused by insect and disease
6 damage. And the term natural mortality is applied to
7 the trees that succumb during this self-thinning
8 process.

9 The stands that are established by
10 artificial means go through the same process. Trees
11 that are normally planted at a spacing of about two
12 metres by two metres where the site conditions permit,
13 so we may be talking about trees anywhere between 1,500
14 and 2,500 per hectare, are planted at that spacing to
15 accommodate natural mortality and, more particularly,
16 to provide form training and some degree of
17 self-pruning to the trees in the stand. So the trees
18 that are grown at a proper spacing produce a higher
19 quality. If, on the other hand, we only planted 400
20 trees per hectare, they would be pretty tapered limby
21 trees at the time of their maturity.

22 Now, stands that start off at very, very
23 high densities such as those poplar stands you were
24 looking, at suffer very, very high rates of natural
25 mortality. And some species self-thin themselves

1 better than others.

2 Poplar -- large tooth aspen is a great
3 self-thinner. Some individuals exert their dominance
4 early and others are dropping out and the stand never
5 stagnates, it keeps growing. On the other hand, some
6 species like jack pine if they are grown at very, very
7 high densities will stagnate; that is, the trees will
8 fail to continue to develop well as a result of
9 competition with each other.

10 But all this natural mortality and this
11 self-thinning process is beneficial to stand
12 development. Now, in the picture that is before you,
13 photo No. 5, we recognize that this self-thinning
14 process does not necessarily select the same tree that
15 we wish to see survive.

16 Maple has a tremendous variation in
17 quality tree to tree, and the well formed tree is not
18 necessarily a better competitor than the poorly formed
19 tree. In this picture that is before you, crop trees
20 have been selected and painted blue. If you look here
21 you can see there is blue paint on this crop tree and
22 there is another crop tree back here and another one
23 here. It's probably not possible to see the blue at
24 the back of the room, but it should be at the front.

25 Those trees have been identified as

1 having good form and good potential quality and the
2 competitors to those trees have been removed. You can
3 see these stumps, the snow must have been pretty deep.

4 Now, the technique used was felling,
5 felling with chain saws not girdling. Herbicide
6 injection in this case is not an alternative because
7 many of these trees are root grafted to each other and
8 the chemical would be translocated down the stem to the
9 root system as well and there could be a transfer or a
10 flashback from the treated tree across to the crop
11 tree.

12 So, in this case, herbicide injection is
13 not an acceptable alternative but girdling might be or
14 tree felling depending again on the practical factors.

15 THE CHAIRMAN: Mr. Hynard, that last
16 concept you were putting to us, does that mean the root
17 system are actually joined together or they just pass
18 each other?

19 MR. HYNARD: No, they are actually joined
20 together. There is a connection between them.

21 THE CHAIRMAN: So it is the same root
22 system, effectively?

23 MR. HYNARD: In effect, they have fused
24 together. We see root grafts occurring in maple stands
25 like this, you also see it in red pine plantations

1 where the roots come in contact with each other and
2 fuse together and form a graft and, of course, it
3 occurs also in poplar stands where entire clones are
4 originating from the same root system.

5 Now, there is all kinds of various
6 thinning treatments and thinning processes. This is a
7 selective approach to thinning. Trees have been
8 selected as crop trees and their competitors have been
9 selected for removal and the thinning will not be of
10 uniform density across the entire stand.

11 For example, where there is a tremendous
12 number of candidate crop trees, good trees to be
13 released, the work may be more intensive than on a high
14 dry knoll just a little further down the stand where
15 the tree quality is poorer.

16 This is a selective approach to doing
17 thinnings and because the trees have not been used,
18 they have simply been felled and left on the ground,
19 it's a non-commercial thinning effected by felling.

20 Now, thinnings can be effected by
21 commercial means also where the products can be
22 salvaged or harvested at a profit. This is a time
23 sequence again. You are looking at a stand of clearcut
24 origin in -- presumably clearcut origin. The stand is
25 65 years of age and the picture was taken in 1978.

1 This is the same location in 1979, one year after
2 treatment and you can see that the residual trees, the
3 crop trees - there is the blue. Mrs. Koven, can you
4 see the blue from there?

5 MRS. KOVEN: Mm-hmm, yes.

6 MR. HYNARD: These crop trees have not
7 expanded their crowns, they have only had one year and
8 they still have tiny crowns and so there is a
9 tremendous amount of light coming into this stand as
10 you can see as a result of that thinning treatment.

11 Maple is a very shade tolerant species
12 and it will respond to release but, in the meantime,
13 the amount of light that is coming into the stand will
14 encourage the development of an understory.

15 Here we go again, same location and we
16 are now -- before I leave this, I should mention, this
17 is photo No. 6 from the statement of evidence. This
18 one is photo No. 7, same spot eight years later. And I
19 don't know if you can actually see it, but I think you
20 can, I think you can.

21 The trees are building crowns now, there
22 is less light coming into the stand, certainly
23 overcrowding between the residual trees has not
24 returned nor will it for some time. That stand
25 certainly is good for 20 years after a thinning of that

1 intensity. And look at the degree to which the
2 understorey, mostly maple, has grown up. And I want
3 you to take a picture in your mind of that understorey
4 development and compare it to red pine plantation
5 thinnings that we will see in a few moments.

6 In an interrogatory Forests for Tomorrow
7 asked for references showing that thinning produces the
8 results claimed. And that interrogatory, Forests for
9 Tomorrow No. 15, was filed as a part of that package
10 earlier this afternoon. But even more, I would like to
11 file with you some biscuits that were cut from this
12 particular project.

13 MR. FREIDIN: Q. Perhaps you should
14 explain for the record what a biscuit is and then I
15 will hand out these Xerox copies of which you have got
16 there.

17 MR. HYNARD: Q. A biscuit is a section,
18 a cross-section cut from a tree. Normally what I do in
19 stands treated in this fashion is to simply bore the
20 trees and look at the increment, the core, to see how
21 the tree has responded to release.

22 However, those cores are fairly fragile
23 and they don't show things very clearly. So at the
24 time we took this photograph in 1986 we cut a couple of
25 trees down.

1 There were two trees cut down at the
2 time. One was a crop tree that had received a release
3 eight years before and then we deliberately sought out
4 a non-crop tree that received no release and we cut the
5 biscuits from those two trees in order to show you what
6 kind of growth response to expect from that kind of
7 treatment.

8 MR. FREIDIN: Mr. Chairman, I am not sure
9 whether this is a first for the Board to receive actual
10 biscuits.

11 THE CHAIRMAN: Do we get milk with it or
12 just plain?

13 MR. FREIDIN: Milk. I have got -- what I
14 have done is I have Xeroxed, off the face I guess, of
15 each of those and I can put those in as an exhibit, but
16 I think we would like to file the actual biscuits
17 themselves and perhaps each of them should get a
18 separate exhibit.

19 Q. And, Mr. Hynard, perhaps you could
20 describe each of them so we will understand what they
21 are when we read the list of exhibits.

22 THE CHAIRMAN: Okay. I guess we will put
23 in the smaller one as Exhibit 613. Which one is this,
24 Mr. Hynard, the smaller one?

25 MR. HYNARD: It is the unreleased

1 non-crop tree.

2 ---EXHIBIT NO. 613: Biscuit obtained from an
3 unreleased non-crop tree.

4 THE CHAIRMAN: And Exhibit 614 will be
5 the crop tree.

6 ---EXHIBIT NO. 614: Biscuit obtained from a crop tree.

7 MR. HYNARD: Mr. Freidin, did you pass
8 out the photocopies of that? I have a photocopy in
9 front of me too and what I will describe is what you
10 are actually looking at here.

11 THE CHAIRMAN: Okay. Should we mark the
12 photocopy as well, Mr. Freidin?

13 MR. FREIDIN: I think so.

14 THE CHAIRMAN: Exhibit 615.

15 ---EXHIBIT NO. 615: Photocopy depicting biscuits
16 (Exhibits 613, 614).

17 MR. FREIDIN: Q. I am just wondering,
18 Mr. Hynard, if you could read the writing on your Xerox
19 copy. If you could perhaps read it onto the record for
20 the benefit of those who may not be able to read
21 clearly from the Xerox copy.

22 MR. HYNARD: A. Yes, Exhibit 614 reads:
23 "Released crop tree from the project
24 shown in photos 5, 6 and 7 on page 142 of
25 the Panel 12 statement of evidence."

1 On that biscuit and on the photocopy
2 there is a line indicating the year in which treatment
3 occurred. It is marked year of treatment and that is
4 the annual ring that was put down by that tree in the
5 year following treatment to the right of that line.

6 In comparing the diameter growth which
7 has occurred in the eight years since treatment to the
8 diameter of growth which occurred in the eight years
9 before treatment, there has been a growth response of
10 about 50 per cent; in other words, the tree is growing
11 about 50 per cent faster in diameter now than it was in
12 the eight years before treatment.

13 Diameter increment is only one measure of
14 growth. It is the one that I chose here because it is
15 so easy to do. On Exhibit 613, the label reads:

16 "Unreleased non-crop tree from the
17 project shown in photos 5, 6 and 7, page
18 142, Panel 12 statement of evidence."

19 It is the same project and it is the one
20 that is in front of you on the screen. There is
21 similarly a line with a label year in which other trees
22 released and there is a note at the bottom:

23 "Growth decline approximately equal to 15
24 per cent."

25 In other words, the rate of diameter

1 growth of this tree in the eight years since the
2 project is 15 per cent less than in the eight years
3 before the project.

4 Now, that's perfectly normal that trees
5 as they grow older and larger have a lesser rate of
6 diameter increment. So it would be normal to expect in
7 an untreated stand diameter increment rates would be
8 slowing down. However, in the case of the release crop
9 tree, Exhibit 614, the tree is growing faster than it
10 was before treatment.

11 Now, this is not a scientific study, but
12 I have bored enough crop trees over the years to assure
13 you that this is a very typical and representative
14 example of the results that you can expect from
15 treatments of this type on sites of this type in stands
16 in this condition.

17 Q. Mr. Hynard--

18 A. I was tempted to bring a biscuit in
19 which would just knock your socks off. The tree was
20 growing about eight times faster, but that is
21 unrepresentative.

22 Q. Would you expect residual trees in
23 all thinning projects to show an increased rate of
24 diameter growth such as shown on these?

25 A. No, I wouldn't. And if you will

1 allow me I will elaborate on that a little more when we
2 get to the red pine stand which is thinned.

3 Now, if everyone is clear on what those
4 biscuits show, I will move on.

5 MR. FREIDIN: Mr. Chairman, the next
6 three photographs are photographs which aren't included
7 in the witness statement. We will be providing a hard
8 copy for the Board and we do not have -- at this time
9 have a Xeroxed copy of the photographs, but we will
10 provide those as well.

11 THE CHAIRMAN: Do you want to give them a
12 number now?

13 MR. FREIDIN: I think we might just as
14 well give them a number.

15 THE CHAIRMAN: Exhibit 616A, B and C.

16 MR. HYNARD: There are actually four, Mr.
17 Chairman. Could we add a 616D also?

18 THE CHAIRMAN: Very well.

19 MR. HYNARD: This is Exhibit 616A. It
20 shows a commercial thinning in a red pine plantation in
21 Minden, and this small mechanical harvester is a
22 shortwood harvester. It fells, limbs, bucks and tops
23 of the tree right at the stump. It bucks the wood into
24 eight-foot lengths and leaves it on the ground in piles
25 and that wood is picked up later by a small

1 skidder-like forwarder.

2 In this case, the thinning is being
3 conducted by a commercial operation. The only
4 difference between that we now have a machine picking
5 up the wood and taking it out.

6 What separates commercial operations from
7 non-commercial? And the answer is the profitability.
8 It must be possible to market a usable product from
9 those trees at a profit, otherwise no sensible logger
10 will conduct the operation. And because of the small
11 tree size and the low yield and the low value of the
12 products, commercial thinnings are not widespread
13 across the area of the undertaking. They do occur
14 though and they occur in -- more commonly in some
15 circumstances than others and in some areas than
16 others, and those specifics are contained within the
17 statement of evidence.

18 The OFIA/OLMA asked the question whether
19 there are circumstances in which commercial thinning is
20 undertaken in which the products cannot be marketed at
21 a profit. And the answer is no, I am not aware of any
22 circumstances where this is normally done. It
23 certainly happens to some of our loggers inadvertently.

24 ---EXHIBIT NO. 616A: Slide depicting commercial
25 thinning in a red pine plantation
in Minden.

1

2

MR. HYNARD: This is photograph 616B

3

after the thinning. You will recall in the case of the

4

the maple stand that thinnings were done selectively

5

and trees were identified as crop trees and released

6

from their competitors.

7

In this case, the machine is going down

8

the row and removing all the trees from the row.

9

That's a systematic approach to thinning. In addition,

10

he is reaching into the area between the rows to remove

11

some trees that have been selected and painted. So in

12

actual fact this thinning operation combines a

13

systematic and a selective approach.

14

Mr. Freidin asked me if I would expect

15

that the residual trees in all thinning projects would

16

show an increase in diameter increment such as the

17

biscuit that I provided you and I said no, I would not

18

expect that. I would not expect to cut down a tree in

19

this project eight years from now and see a growth

20

response resulting from this thinning.

21

Instead I would expect to see that these

22

trees are growing at a rate faster than they would have

23

been growing had they not been thinned. So in order to

24

document that kind of approach would require a control

25

plot.

1 Nonetheless, these trees certainly would
2 be growing faster than they would otherwise have been
3 growing and we would certainly be obtaining larger
4 trees sooner from a stand which has been thinned.

5 ---EXHIBIT NO. 616B: Slide depicting a commercial
6 red pine plantation in Minden
 after thinning.

7 MR. HYNARD: This is Exhibit 616C. You
8 will recall I asked you -- at the time of the slide on
9 the maple thinning eight years following treatment, I
10 asked you to note the development of the maple
11 understorey and compare it to the red pine plantation.

12 This picture and the next one are both
13 red pine plantations, they are both on former
14 agricultural land and they are both 53 years of age.
15 They have both been thinned three times. In fact,
16 these plantations are neighbours, no more than a
17 quarter of a mile separates them.

18 You will notice in this one, 616C, that
19 there is virtually no understorey development, despite
20 the fact that the plantation has been thinned three
21 times.

22 ---EXHIBIT NO. 616C: Slide depicting red pine
23 plantation with no understorey
 development.

24 MR. HYNARD: I am sorry this is
25 photograph -- or Exhibit 616D now. And I must

1 apologize for the quality of the picture, it is dark.
2 It was a colour print and we had a slide made up from
3 the print.

4 However, I think you can see pretty
5 clearly that there is a very, very strong understorey
6 development of maple, oak, ash and shrubs in this case.
7 You can see that the overstorey doesn't look any
8 different. It is red pine -- planted red pine, it is
9 from agricultural land, it has been thinned three
10 times, it is about the same density as the previous
11 picture but it has a tremendous understorey. In fact,
12 the next stand is sitting right there or it could be.
13 (indicating)

14 The question is why are these two areas
15 so different? Site is the difference. In the previous
16 picture, 616C, you are looking at a silt-free waterlaid
17 stand. It is relatively dry and relatively infertile
18 and that understorey, the maple and the oak and the ash
19 and the shrubs, like a richer site, so they are not
20 establishing here.

21 There is a seed source adjacent to this
22 stand and yet very little understorey is developing.
23 The reason for that is that it is not a
24 competition-prone rich site. It is a great site for
25 red pine, it is doing well. Sites of this nature occur

1 in nature also, and I am thinking there of the jack
2 pine outwash sand flats that Dr. Euler referred to in
3 Panel 10 as poor moose habitat, and this is poor moose
4 habitat.

5 On Exhibit 616D, though, down the road a
6 quarter of a mile, we have a soil with a higher silt
7 content and higher silt content means better moisture
8 availability and better fertility and that's what has
9 encouraged understorey development in conjunction with
10 the thinnings.

11 ---EXHIBIT NO. 616D: Slide depicting red pine
12 plantation with understorey
development.

13 MR. HYNARD: Improvement cuttings. This
14 is Figure 4 from the statement of evidence.

15 MR. FREIDIN: Page 129, Mr. Chairman.

16 THE CHAIRMAN: Thank you.

17 MR. HYNARD: Improvement cuttings are
18 made in immature even-aged stands or in uneven-aged
19 stands for the purpose of improving species composition
20 or quality where such action will assist the residual
21 stand. So trees of undesirable species or form or
22 condition are removed.

23 The picture here is an uneven-aged -- it
24 depicts an uneven-aged maple stand following a
25 selection cut in which two cull trees remain. This

1 tree and this tree (indicating). And an improvement
2 cutting would be simply the removal of trees like that.
3 It could be effected by commercial or non-commercial
4 means, it could be effected by felling or girdling.

5 This next photograph is photograph 3.9
6 from the Panel 10 statement of evidence. It shows an
7 uneven-aged maple stand which has received an
8 improvement cut integrated with the harvest and the
9 technique used was felling.

10 Our last category, other intermediate
11 cutting. Intermediate cuts are often designed to fit
12 the stand conditions at hand. They may not necessarily
13 fit into any of the categories that you have heard
14 described to you before. Things like liberation cuts
15 and shelterwood removals and selection cuts, they may
16 be something different.

17 However, intermediate cuts have one thing
18 in common and that is that they are conducted between
19 the regeneration stage and the final harvest and they
20 are done to improve the condition of the residual
21 stand.

22 The picture that you are looking at right
23 now is photograph 1.4.2 from the Panel 10 statement of
24 evidence and it shows a clearcut with standards. So
25 what we have is a regenerating young stand in that

1 picture with scattered residual trees. And the reason
2 that I am showing you that picture is to give you the
3 sense of before/after.

4 This next picture is photograph No. 8
5 from the Panel 12 statement of evidence and it is
6 showing an intermediate cut in which scattered veterans
7 from the previous stand have been removed from a
8 relatively young maple stand.

9 It is the kind of situation that might
10 result 50 years following a clearcut with standards in
11 maple. I include that category here because when you
12 look at the statistics that are about to follow someone
13 will ask me the question: What is the other category.
14 Some of the other category is precisely this.

15 And that's the end of the slides. I have
16 one last section of evidence and that is on tending
17 statistics.

18 MR. FREIDIN: These slides or overheads
19 are Exhibit 609, I believe, Mr. Chairman.

20 MR. HYNARD: The statistics that I am
21 going to be giving you are meant to give you an
22 understanding of tending within the area of the
23 undertaking, how much is done by treatment type and
24 where generally it is done and what the recent trends
25 have been.

1 This pie diagram portrays information
2 that is contained on Table 1, which is page 118 of the
3 statement of evidence. During that year, 1986/87, we
4 tended a total of 80,369 hectares across the area of
5 the undertaking. Most of the tending carried out in
6 that year was chemical cleaning from the air. That's
7 this large pink section of the pie right here.
8 (indicating)

9 The second largest category was manual
10 cleaning. That's this green section of the pie here.
11 (indicating) 60 per cent of the manual cleaning in
12 that -- that comprises that green section, was
13 performed in the northeastern and Algonquin regions;
14 that is, within the Great Lakes/St. Lawrence Forest.
15 60 per cent then was within the Great Lakes/St.
16 Lawrence Forest and it includes some of the treatment
17 types that I showed you here this afternoon.

18 The other 40 per cent includes things
19 like jack pine juvenile spacing in northwestern Ontario
20 and conifer release work by manual methods across the
21 north.

22 Conifer release work, manual cleaning in
23 the boreal forest is confined mostly to small project
24 areas and to areas of concern. A considerable amount
25 was done in this year, 1986/87, largely due to the

1 availability of Unemployment Insurance Section 38
2 funding, and labour in that year.

3 The category chemical cleaning ground,
4 this section of the pie right here (indicating)
5 includes a herbicide injection technique that I showed
6 you this afternoon. It is included in this section
7 here. (indicating) That section would include
8 herbicide spraying from ground application as well.

9 The other categories of the pie are
10 thinning and improvement, the yellow section here.
11 (indicating) Both thinning and improvement cutting are
12 both included in here. (indicating) Pruning, which is
13 this tiny little - is it blue - slice of the pie, and
14 other. (indicating)

15 Well, I am going to answer the question
16 now because someone will ask me what is the other, and
17 I put that question to our management planning section
18 in Sault Ste. Marie. I said: John Kuse, tell me what
19 the other is, who is doing it and where is it?

20 And he tracked it down to, I think it was
21 four districts of which Minden was one. He said: Why
22 don't you ask them in Minden what they are doing. And
23 tracking down the projects, it included intermediate
24 cutting for veterans in two-age stands.

25 The other treatments include the removal

1 of poplar component from young maple stands in Parry
2 Sound District and the removal of damaged -- ice storm
3 damaged red pine and deformed red pine in plantations
4 in Blind River District. Those three districts
5 included virtually all of the other treatment.

6 MR. FREIDIN: Just while Mr. Hynard is -
7 go ahead, Peter - while he is just changing the
8 overhead, Table No. 1 on page 118 there is a small
9 correction to be made in the source at the bottom of
10 the table.

11 It indicates for all Crown management
12 units; it should be for all forest management units.
13 So just change the word Crown to forest, then the
14 heading -- that will be consistent with the heading of
15 the table at the top of the page.

16 MR. HYNARD: This series of three
17 diagrams which is, Mr. Freidin, exhibit number...?

18 THE CHAIRMAN: Still part of the same
19 one, I believe.

20 MR. FREIDIN: 609.

21 MR. HYNARD: 609. Thank you.

22 THE CHAIRMAN: B.

23 MR. FREIDIN: B.

24 MR. HYNARD: They show the tending trends
25 over the past three years 1986/87, which is at the top,

1 1985/86 and 1984/85.

2 The relative size of the pies represents
3 the relative changes in total area treated from 56,000
4 hectares in 84/85; 76,000 in 85/86 and 80,000 in 86/87.
5 So that you can see the amount of tending has been
6 growing steadily in the recent past.

7 The pies also show the relative breakdown
8 by treatment type and you can see that chemical
9 cleaning by aerial methods continues to represent the
10 largest area. In fact, if you look at the pie diagram
11 from here there is a great deal of similarity in the
12 breakdown by treatment type over the past few years and
13 a steady growth in the total amount of tending done
14 across the area of the undertaking.

15 And that's the end of my direct evidence,
16 except that I would like to conclude it with a quote
17 from page 11 of the Provincial Auditor's Report which
18 is Exhibit 28.

19 I had so many people quoting it to me
20 last week I thought I would take this rare opportunity
21 to quote it myself. On page 11 of Provincial Auditor's
22 Report it reads:

23 "After being planted, new seedlings must
24 compete with other vegetation such as
25 weeds and scrub brush. Often if left

1 uncontrolled this other vegetation may
2 crowd out or significantly inhibit the
3 growth of the seedlings. The Ministry
4 recognizes the consequences of this as
5 evidenced by their policy stating that
6 appropriate tending practices should be
7 carried out where competing vegetation
8 will delay or prevent successful
9 regeneration of the site. The most
10 economical method of tending is aerial
11 spraying of herbicides which kills off
12 the competing vegetation yet leaves
13 the seedlings undamaged. Generally the
14 optimum time to do this is within several
15 years of the original planting before the
16 competing vegetation is firmly
17 established."

18 And that, Mr. Freidin, concludes my
19 evidence.

20 MR. FREIDIN: Mr. Chairman. I think that
21 will probably be a convenient place to stop for the
22 day, Mr. Chairman.

23 THE CHAIRMAN: Okay. Thank you.

24 MR. FREIDIN: And we are starting at
25 11:30 tomorrow morning?

1 THE CHAIRMAN: Yes. As soon as the 8:50
2 plane arrives. If it is delayed we will be starting
3 late.

4 MR. FREIDIN: Okay.

5 THE CHAIRMAN: Thank you.

6 ---Whereupon the hearing adjourned at 3:45 p.m., to be
7 reconvened on Tuesday, June 6th, 1989, commencing at
8 11:30 p.m.

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